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SEPTEMBER 1947

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(Regular Edition)

Entered as second-class matter at the Post Office, Concord, N. H., under the Act of March 3, 1879.

VOL. 102 • NO. 3 September 1947

ARCHITECTURAL RECORD

F.W.DODGE CORPORATION

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Architectural Record (combined with American Architect and Architecture) is published monthly by F. W. Dodge Corporation, 10 Ferry St., Concord, N. H., with Editorial and Executive Offices at 119 West 40th Street, New York, N. Y. Thomas S. Holden, Pres.; Howard J. Barringer, Vice-Pres. and Treas.; Irving W. Hadsell, Vice-Pres.; Chauncey L. Williams, Vice-Pres.; Sanford D. Stockton, Jr., Secy.; Walter F. De Saix, Asst. Treas.; Edwin H. Freed, Asst. Treas. Member Audit Bureau of Circulation and Associated Business Papers, Inc. Architectural Record is indexed in Reader's Guide, Art Index and Industrial Arts Index. Subscription rates: United States and Possessions, Canada, Cuba, Mexico, Central and South America, and Spain, $4.50 the year, $7.50 for two years, $9 for three years; elsewhere, $6.50 the year, $11.50 for two years, $15 for three years. Single copy, $1. Circulation Manager: Marshall T. Ginn. Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage. Other Dodge Services: Real Estate Record & Builders' Guide, Sweet's Files, Home Owners' Catalogs, Dodge Reports & Dodge Statistical Research Service.

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THE RECORD REPORTS

Upturn in Construction Activity Follows End of Government Controls • Congress Will Investigate Housing Costs • Lumber Outlook Mixed • Hospital Funds Ready

Scarcely was the ink dry on the death warrant of government controls over building on July 1st when construction activity began to pick up just as industry leaders long had predicted it would. The trend upward, felt in all parts of the country and in all types of construction was particularly noticeable following the slump in volume from March through June which brought the total for the first half of 1947 down 11 per cent from the 1946 figure for the same period (F. W. Dodge Corporation report).

The upturn following removal of controls was more marked, of course, in non-residential construction than in residential. A tremendous backlog of need in the non-residential field had built up through the years of control — and industry always is willing to pay for what it really needs. In the residential field the high costs of building are proving more of a hurdle.

But despite the cost situation, home building, too, has taken a decided spurt. The National Association of Real Estate Boards reports that New Orleans builders are planning about 2500 new homes; that requests to the Home Builders Association of Greater Cleveland for help in locating builders trebled in three weeks; that home construction in Pittsburgh doubled from the middle of June to the end of July; that the Dallas FHA office predicts 5000 new apartments for that area within a year; and that Los Angeles County builders expect to erect 60,000 new homes in 1948.

Upturn is Official

Not only private organizations but government agencies as well have reported the upward trend in construction volume. The Bureau of Labor Statistics records show 75,000 starts in June — 17 per cent higher than in June a year ago, and higher than any single month since the building boom of the mid-20's. The June figure is significantly above that for the preceding month (72,500 starts) despite the fact that construction usually reaches its peak for the year in May.

Government surveys of construction activity show a June-July upturn of 10 per cent in June and 8 per cent in May. Official comments point to: (1) a trend toward greater building activity in suburban areas and small towns and villages, where land costs are more favorable; (2) a more than proportionate increase in apartment house construction; and (3) a jump in street and highway work to the extent that one of every 10 construction workers was used in June, 1947 compared to one of every 20 in June of last year.

FHA reports that it received more applications for mortgage insurance in June, 1947 than in any previous month in its experience — more than five times the figure a year ago.

The only slightly sour note in the general chorus was sounded by the Commerce Department in its midyear statement estimating that new construction put in place in 1947 will total about $12.2 billion. Says CD: "When allowance is made for changes in construction costs, it appears that the physical volume of construction in 1947 will have been exceeded in at least 12 years out of the last 30 and that it will be less than two-thirds of the peak physical volume reached in 1927. On the other hand, the physical volume of construction in 1947 will be slightly higher than in 1946 and between 5 and 10 per cent above the level of 1939."

How High Are Costs?

In this midyear economic report, President Truman took housing costs to task. "The needed stimulus to more housing construction, and also to industrial and commercial construction," he said, "depends largely upon lower prices. Housing costs can and should be substantially lowered through the efforts of material suppliers, builders and workers."

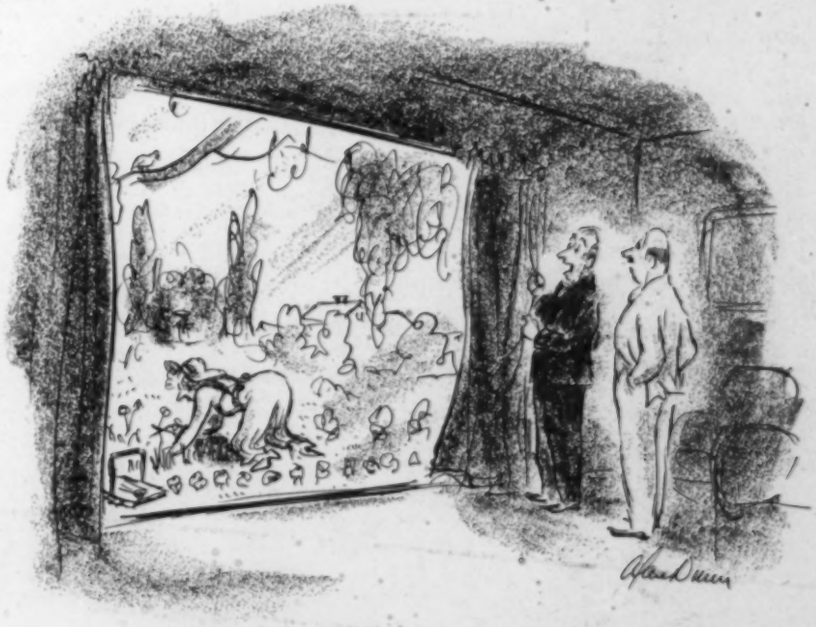
The National Association of Home Builders puts a different slant on housing costs, stating that a smaller portion of family savings or of family income is required today to purchase a new house than in the prewar period. Compared to 1933–39, it says, liquid assets of individuals are up 250 per cent, average individual income is up 119 per cent, but the cost of new houses is up only 82 per cent.

Congress Wants Facts

Before packing up its books for the summer-fall recess, Congress jammed through a record crop of legislation, a good bit of it pertaining directly to housing (see p. 80 for a full report). It also started into the works three housing probes, broadest of which is the $50,000 House-Senate look-see authorized just before adjournment.

In debate on this joint probe, Senator Taft of Ohio pointed out that while the entire housing field was within the scope of the committee, emphasis is on the cost of housing, "the high cost of building, the possible combinations between materialmen on costs, possible restric-

(*Continued on page 10*)



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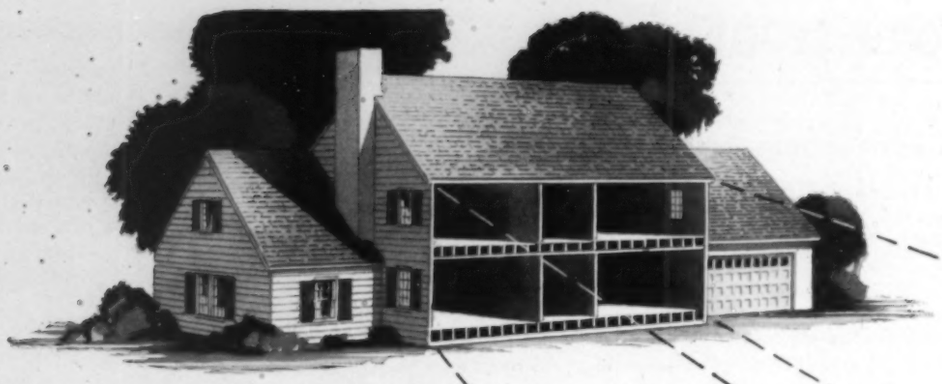
—Drawn for the RECORD *by Alan Dunn*



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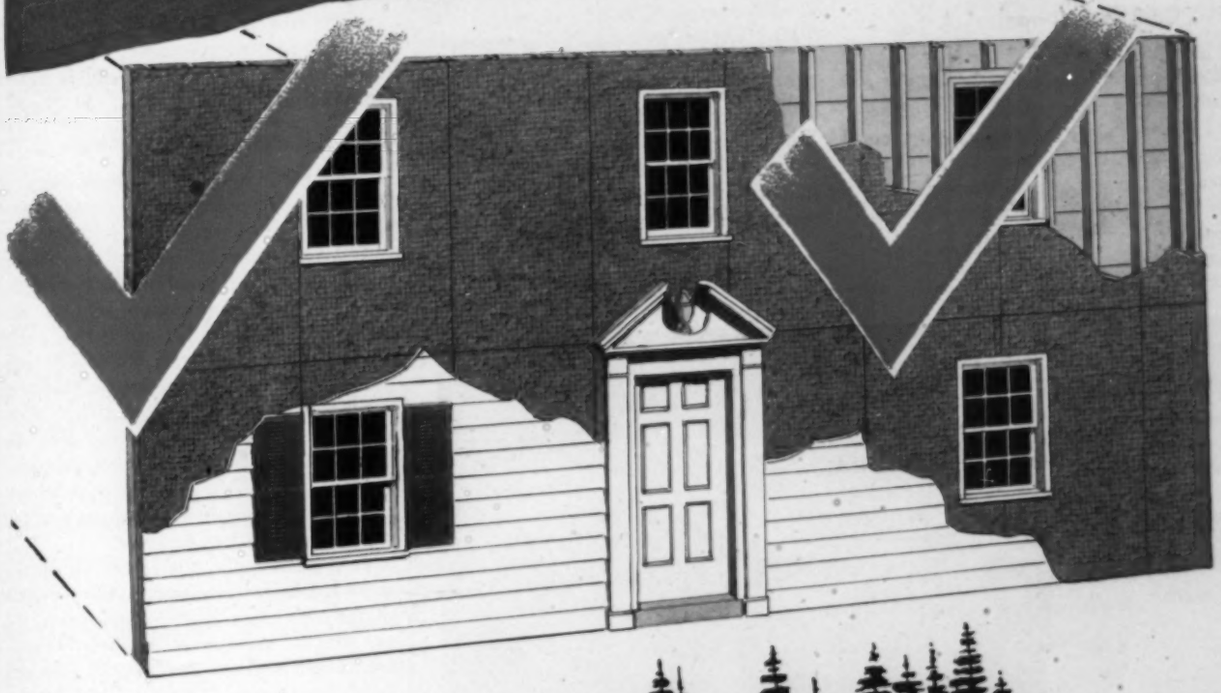

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tive labor practices, building codes in different cities."

Members of the joint committee are: Senator Tobey of New Hampshire, chairman; Senators Flanders of Vermont, Cain of Washington, McCarthy of Wisconsin, Wagner of New York, Taylor of Idaho, Sparkman of Alabama; Representatives Gamble of New York, Sundstrom of New Jersey, McMillen of Illinois, Fletcher of California, Patman of Texas, Rains of Alabama, and Boggs of Louisiana.

Meanwhile, the House Education and Labor subcommittee appointed to inquire into labor problems of housing construction (see ARCHITECTURAL RECORD, Aug., 1947, p. 7) has scheduled the start of field hearings for Oct. 27th in Cleveland.

FPHA Called on Carpet

Third in the series of Congressional probes is an investigation of the Federal Public Housing Authority, requested of the House Committee on Expenditures in Executive Departments by a House Appropriations subcommittee which presented its preliminary findings to the Executive Expenditures unit.

Among charges to be investigated:

"That operating practices approved by FPHA in some instances appear to involve 'improper use of federal funds';

"That the intent of Congress appears to have been circumvented regarding provisions of slum clearance;

"That important provisions of the United States Housing Act have been 'almost completely ignored';

"That sales negotiations based on fair market price or ability to pay are of 'questionable legality';

"That FPHA fosters mutual ownership plans for permanent war housing program not approved by Congress. Such plans include a method by which the FPHA bureaucracy is perpetuated."

NLRB Still Perplexed

The National Labor Relations Board is still enmeshed in the tangle of the Taft-Hartley Act. Adding uncertainty to the already confusing NLRB picture, Congress failed to act on President Truman's nominations to the Board. While this left the way open for the recess appointments, it made certain that the whole question of their confirmation would come up next year.

Meanwhile, the Board debated whether or not it should assert jurisdiction in building and construction industry cases. It asked Senators, but the Senators couldn't answer. Tendency seems to be to shy away from taking on trouble.

Lumber Outlook Mixed

Both trade and government sources point to prospective stabilization of lumber prices with peak levels believed to have been passed last spring. Consumers, it is explained, are not accepting, as the supply improves, anything that is offered but rather are deferring purchases, turning to other suppliers or using alternative materials. Lower grades in particular hit heavy resistance some time back.

This trend is affecting smaller mills, causing them to shut down or shift from lumber to ties — a development which may cut down earlier estimates of lumber production this year.

Continuance of the current trends in the lumber market is expected by the experts to relate itself to developments in construction — housing, commercial, industrial. A downward trend is noted in building materials prices.

Home Ownership Increasing

Indicative housing characteristics of various metropolitan districts for April 1947 in comparison with April 1940 are given in a series of current population reports by the Bureau of the Census.

These sample population surveys, announced city by city, are consistently showing — at least in the early announcements — an increase in the percentage of homes occupied by their owners and a corresponding drop in tenant-occupied dwelling units. In practically all cases the number of dwelling units has increased while the percentage needing repairs has dropped.

In Philadelphia, for instance, owner occupied homes represented 60 per cent of the total last April compared to 43 per cent in April, 1940. In New Haven, Conn., the increase was from 37 per cent to 52 per cent; in Columbus, Ohio, from 41 to 52 per cent, and in Memphis, Tenn., from 32 to 46 per cent.

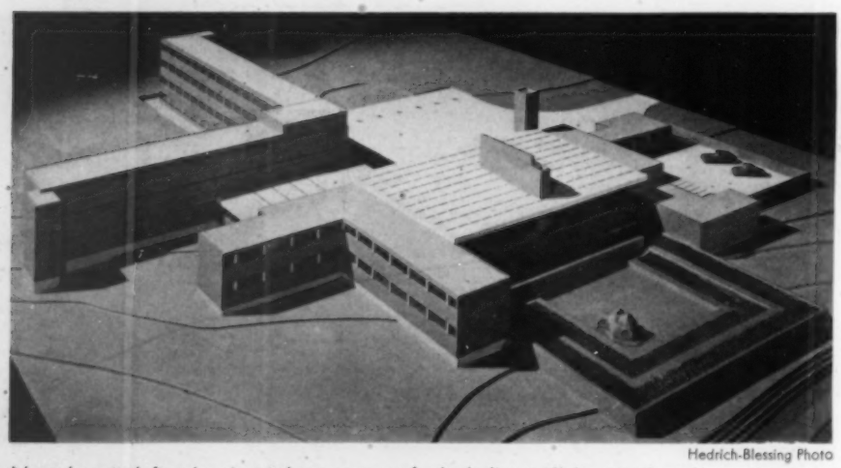
Increase in the number of dwelling units is ranging largely from 10 per cent to 25 per cent (Washington, D. C., however, shows a 40 per cent gain).

Housing Agencies Recast

From the standpoint of federal activity in housing, the new reorganization plan, proposed by President Truman some months back and finally given a Congressional green light, should not be overlooked.

Raymond Foley, former head of NHA and FHA, now is Administrator of the new Housing and Home Finance Agency, which embraces all the housing agencies and principal housing functions of the federal government. There are three

(*Continued on page 12*)



Hedrich-Blessing Photo

New hospital for the special treatment of alcoholics will be residential in character

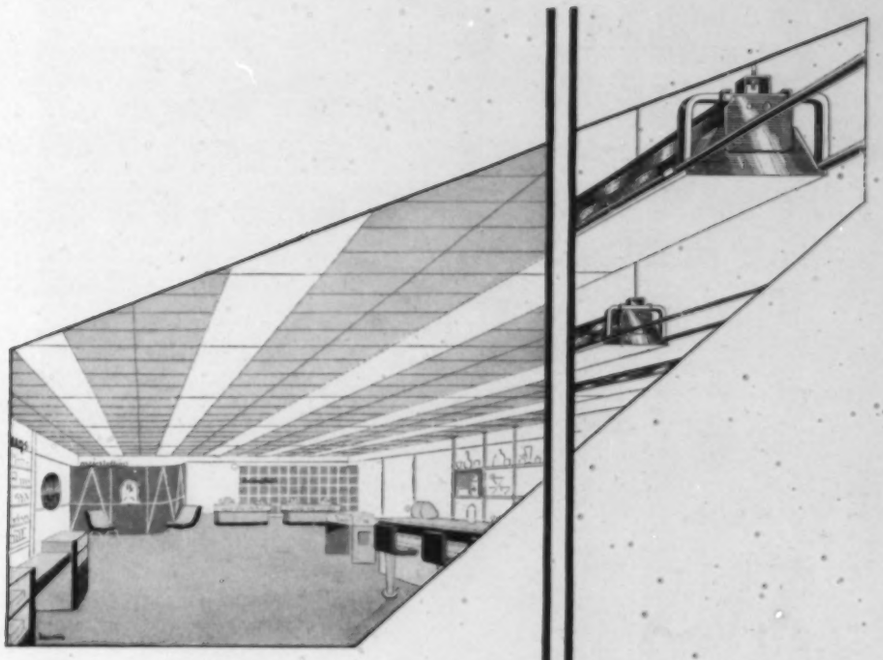
NOVEL HOSPITAL

Preliminary plans have been announced by the Keeley Institute of Chicago for a new hospital at Dwight, Ill., designed expressly for the rehabilitation of alcoholics.

With no precedent to follow in the design of such a "special purpose" building, architects Schweiker and Elting have developed plans keynoted by a combination of functionalism and esthetic appeal — the latter considered especially important in the treatment of alcoholics. Since all patients will be ambulatory, the building will be residential in character.

The plans provide for 84 single and double rooms, a lounge, dining facilities for 130, kitchen, laundry, laboratory, doctors' and administration offices, medical treatment rooms, barber shop and a small store.

Of reinforced concrete and brick construction, the building will have acoustical plaster ceilings throughout and radiant panel heating. Concrete floors will be cork covered in corridors and offices and carpeted in bedrooms. Total floor area will be 47,000 sq. ft.



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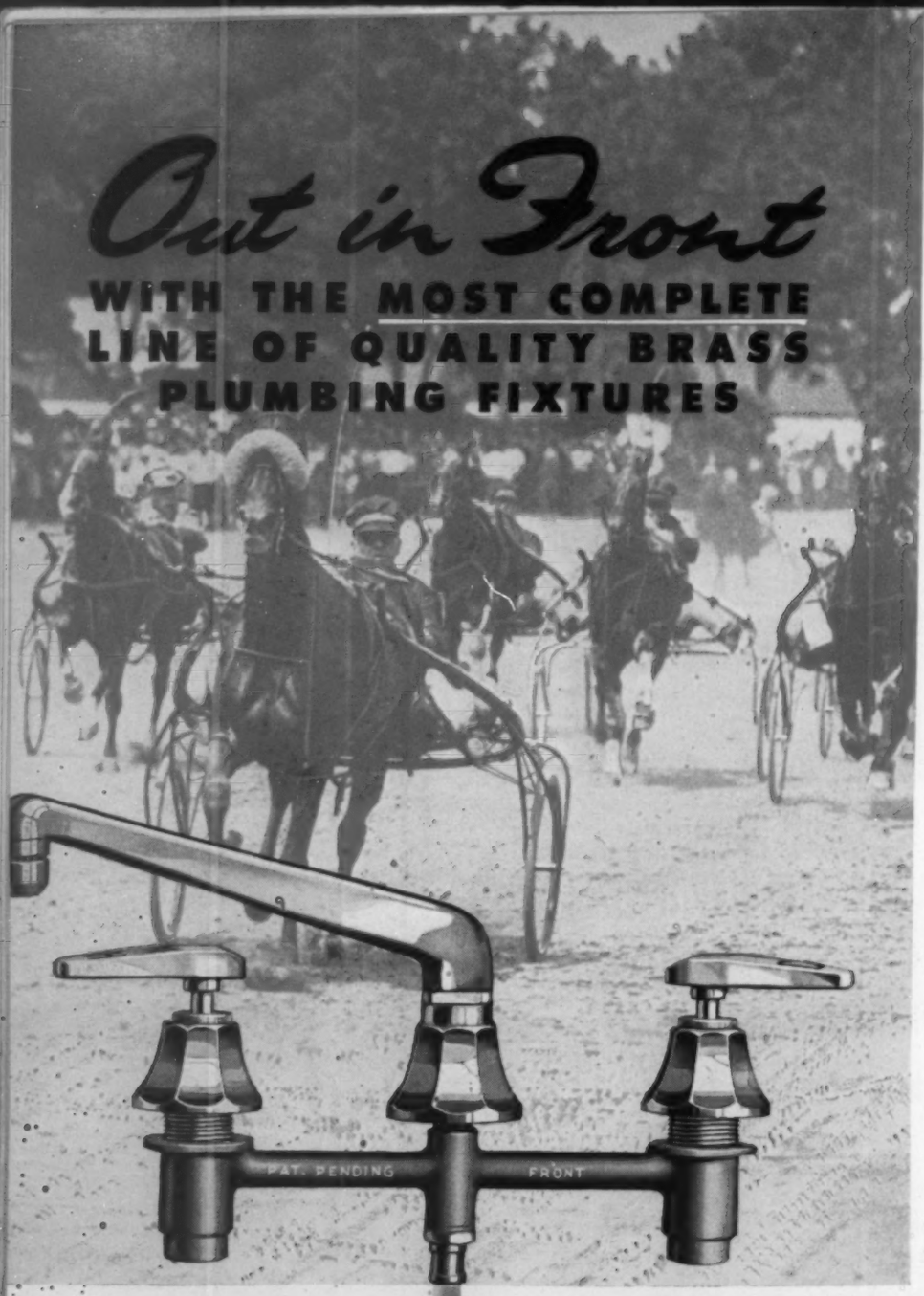

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THE RECORD REPORTS

(*Continued from page 10*)

operating units: the Home Loan Bank Board, the Federal Housing Administration, and the Public Housing Administration.

The plan barely squeezed through Congress by the refusal of the Senate to reject the proposal, which earlier had been rejected by the House. Senate vote was 38 to 47. Under the law, an executive reorganization plan becomes effective within 60 days unless it is rejected by both House and Senate before that time.

Hospital Funds Ready

Construction of $225 million worth of hospital and health facilities during the fiscal year of 1948, says the U.S. Public Health Service, will be possible under the Labor-Social Security Appropriations Act signed on July 8th by the President.

Although no federal funds were directly appropriated for this purpose, the act sets up a procedure which obligates the federal government to pay up to $75 million as its share of approved hospital construction. As Surgeon General Thomas Parran points out, since the federal government pays one-third of the cost, this brings the potential combined total of federal, state and local funds to $225 million. Under the terms of the act, any construction project approved by the Surgeon General creates a contractual obligation on the part of the federal government to meet its share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year, authorizing the appropriation of $3 million for survey and planning and $75 million for construction annually for five years. The $75 million just appropriated for the fiscal year 1948 is the first money to be made available for construction. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

USPHS Explains Procedure

As USPHS explains, no funds have been actually appropriated for construction purposes by the Appropriations Act, but will be made available through the technique of "contractual obligations." In other words, Congress has authorized the Surgeon General to incur obligations on the part of the federal government up to $75 million as the government's share of approved hospital construction.

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(*Continued on page 14*)

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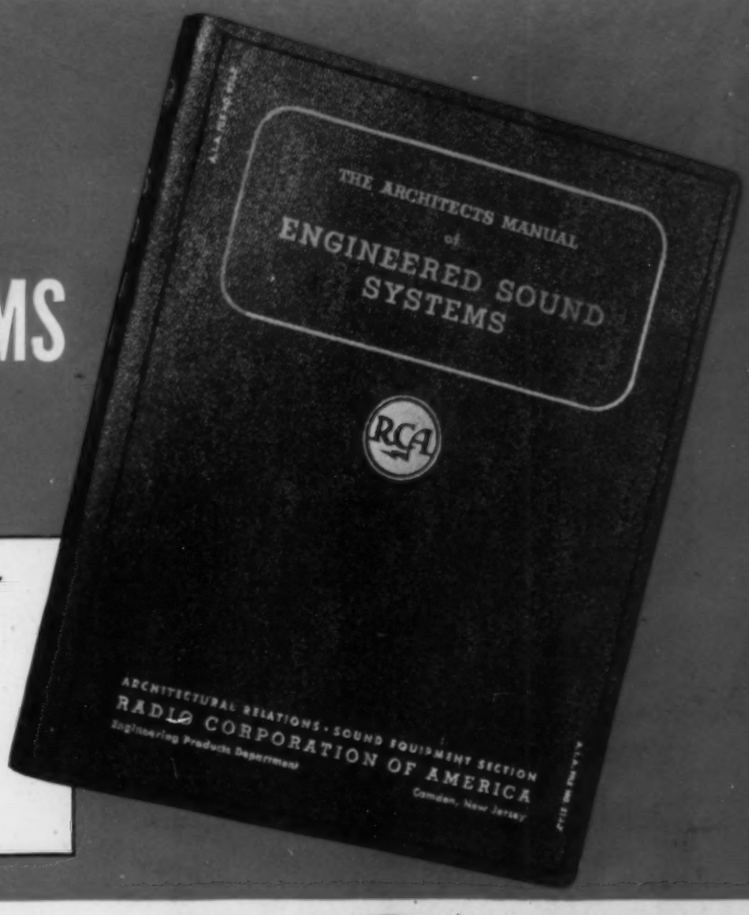

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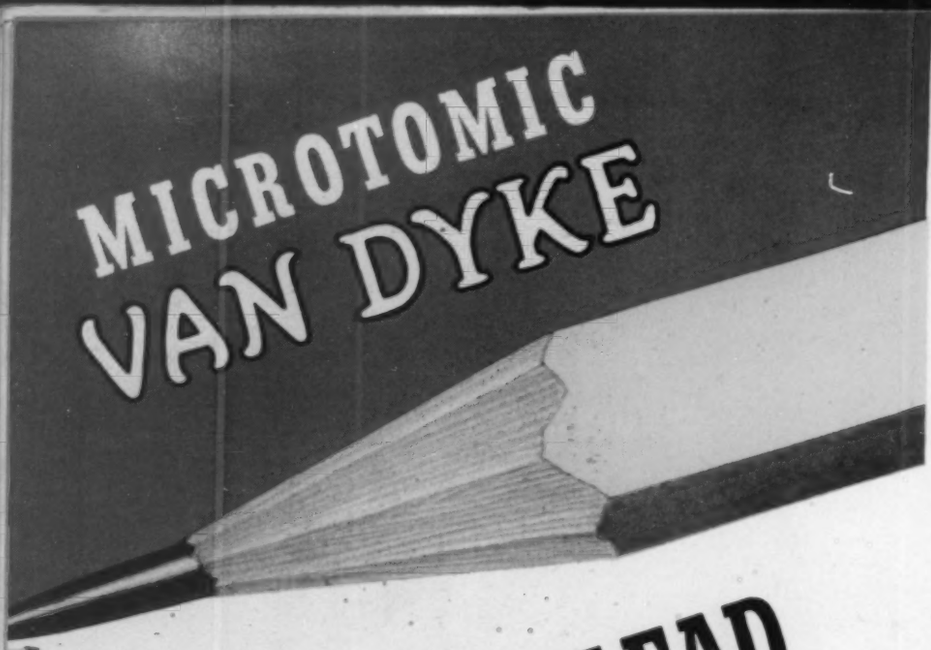

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THE RECORD REPORTS

(*Continued from page 12*)

the procedure which it sets up for obtaining funds has been prepared by USPHS. Copies may be obtained from the Division of Hospital Facilities, U.S. Public Health Service, Federal Security Agency, Washington 25, D. C.

Standardization Moves

In cooperation with state and local health authorities, the FHA has developed standards for the installation of individual water supply and sewage disposal systems. These are the minimum requirements for FHA financing, and intended as a guide for builders of homes in locations where public or community water or sewerage systems have not been installed.

The consolidation of two divisions of the National Bureau of Standards has been announced: Commercial Standards and Simplified Practice are now united in a single division called Commodity Standards. The new unit will continue the Bureau's coordinating role in the development of voluntary simplified practice recommendations and commercial standards with industrial and technical groups. In addition, it will be responsible for coordinating Bureau work for the the Federal Specifications Board. Edwin W. Ely, former chief of the Simplified Practice Divisions, has been appointed chief of the division, and F. W. Reynolds, former acting chief of Commercial Standards, assistant chief.

❖ ❖ ❖

ON THE CALENDAR

Sept. 11–12: Businessmen's Conference on Urban Problems, Chamber of Commerce of the U. S., Washington, D. C.

Sept. 15–19: National Technical Conference, Illuminating Engineering Society, Hotel Roosevelt, New Orleans.

Sept. 15–Oct. 11: Exhibit, "Visualizing the Modern House" (architectural, interior and landscape designs, furniture, paintings, sculpture, pottery), Bertha Schaefer Gallery, 32 E. 57th St., New York City.

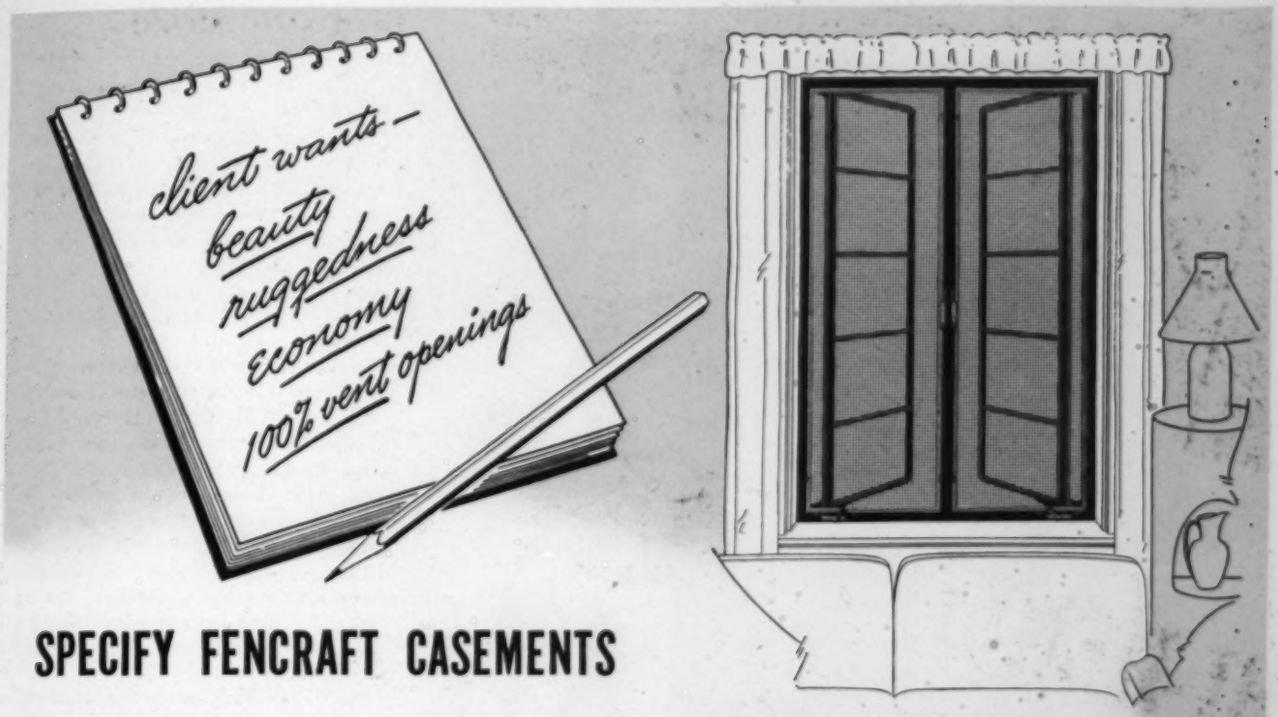
Sept. 22–25: 49th Annual Convention, American Hospital Association, St. Louis, Mo.

Oct. 14–19: 1947 Westchester Better Homes Exposition, Westchester County Center, White Plains, N. Y.

Oct. 18–24: National Metal Exposition, International Amphitheatre, Chicago.

Oct. 20–23: Annual Fall Meeting, Iron and Steel Division and The Insti-

(*Continued on page 16*)



SPECIFY FENCRAFT CASEMENTS

Clubs, dormitories, nurses' homes, restaurants and many other buildings call for windows that combine the beauty and easy operation of a residential-type casement with extra ruggedness and excellent provision for ventilation.

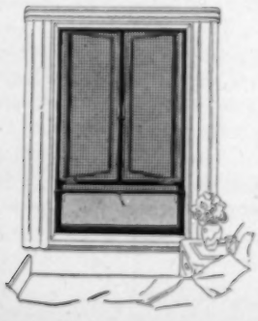
For such uses Fencraft Standard Casement Windows fill the bill. They're expertly made by craftsmen of America's oldest and largest steel window manufacturer. They're quality windows in every respect, suitable for the finest buildings.

ECONOMY THROUGH STANDARDIZATION

Fencraft Casements, as well as Fencraft Projected and Fencraft Combination Windows, are standardized in a range of sizes to fit almost any need. This standardization saves in two ways: first, because manufacturing economies result in lower costs; second, because co-ordination with modular dimensions of modern masonry construction practice saves installation time.

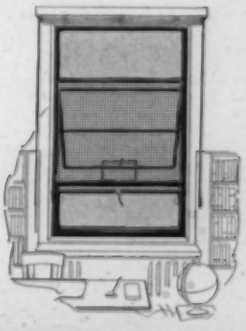
Fencraft Windows offer other benefits, too—more daylight, safe washing of both sides from inside the room, permanently-easy operation, superior weathertightness. Screens are attached easily and safely from inside the room. This easy washing and easy screening pays off—year after year—in lower maintenance costs.

You'll find full information on types, sizes and other details in Sweet's Architectural File (Section 16a-9). Better yet, call us, or mail coupon below.



FENCRAFT COMBINATION WINDOW

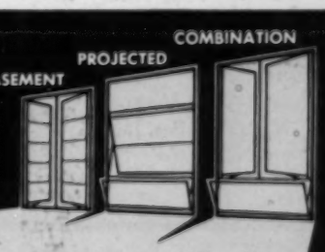
Generous fresh-air ventilation. Swing leaves deflect breezes into the room. In-tilting sill vent protects against drafts.



FENCRAFT PROJECTED WINDOW

Protection from weather, even when open. Open-out vent acts as canopy over opening. Open-in vent deflects air upward, sheds water outside.

Fenestra



FENCRAFT INTERMEDIATE STEEL WINDOWS

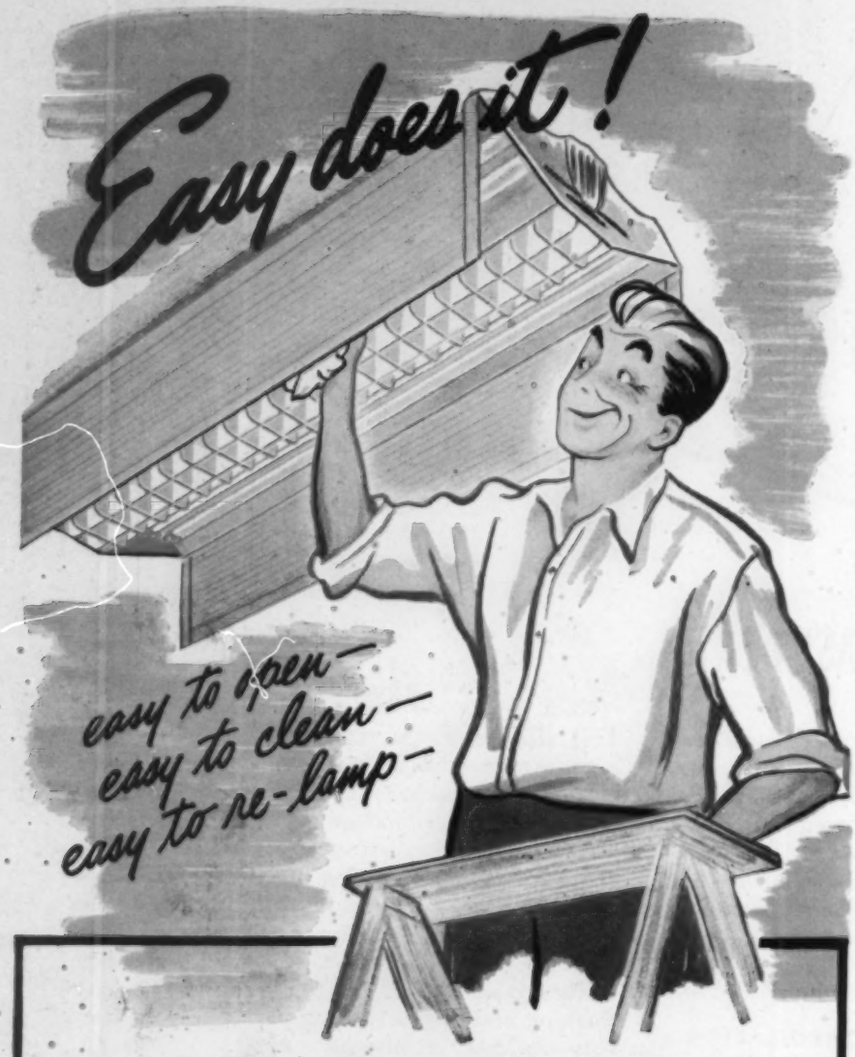
Detroit Steel Products Company,
Dept. AR-9
2252 East Grand Blvd.,
Detroit 11, Michigan

Please send me data on types and sizes of the new Fencraft family of Fenestra Windows:

Name_____

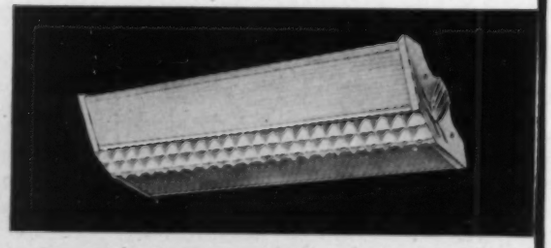
Company_____

Address_____



The VANGUARD

Newest SILV-A-KING Fluorescent Fixture . . . for commercial installations



No more dangerous high-ladder gymnastics . . . no more fancy tools . . . no more lacerated fingers or strong language! The Vanguard opens as easily, quickly, and safely as your fountain pen—for inspection, cleaning, or re-lamping.

For assurance of minimum maintenance time . . . Specify the Vanguard!
I. B. E. W., A. F. of L. • Listed by Underwriters' Laboratories, Inc.
Yours for the asking, "Vanguard" Bulletin No. 447FV

SILV-A-KING LIGHTING EQUIPMENT

BRIGHT LIGHT REFLECTOR COMPANY, INC.
Subsidiary of Bridgeport Pressed Steel Corp.
FAIRFIELD AT STATE • BRIDGEPORT 5, CONN.

THE RECORD REPORTS

(*Continued from page 14*)

tute of Metals Division, American Institute of Mining and Metallurgical Engineers, Stevens Hotel, Chicago.

Oct. 20–24: Annual Meeting, American Society for Metals, Palmer House, Chicago.

Oct. 20–24: Annual Meeting, American Welding Society, Sherman Hotel, Chicago.

Oct. 20–24: Theater Engineering Conference and 62nd Semi-Annual Convention, Society of Motion Picture Engineers, Hotel Pennsylvania, New York.

Oct. 22–25: 1947 Convention, New York State Association of Architects, Hotel Commodore, New York City.

Oct. 30–Nov. 1: 15th Semi-Annual Meeting, American Society of Tool Engineers, Statler Hotel, Boston, Mass.

Nov. 3–7: 2nd International Lighting Exposition and Conference, Stevens Hotel, Chicago.

Nov. 9–14: 40th Convention, National Association of Real Estate Boards, San Francisco, Calif.

Nov. 10–13: 25th Annual Convention, The American Institute of Steel Construction, Inc., Roney Plaza Hotel, Miami Beach, Fla.

Dec. 2–5: Annual Meeting, American Society of Mechanical Engineers, Chalfonte-Haddon Hall, Atlantic City, N. J.

CODE REVISION

CD Issued Pamphlets

Cooperating with nation-wide moves toward the modernization of building codes, the Commerce Department has issued two pamphlets intended to aid city and state officials in the revision of their codes. These documents, CD-1 and CD-2 respectively, list publications on the preparation and revision of building laws and give a work sheet for checking standards and specifications in the various codes. Copies may be obtained upon request from the Construction Division, Department of Commerce, Washington 25, D. C.

Massachusetts Law

The Commonwealth of Massachusetts has recently enacted a law which makes it legally possible for a prefabricator to have his system tested and approved by a state board, and thereafter to sell throughout a state-wide market, free of local building code restrictions and difficulties.

Under the new law, two sections (3J and 3K) are added to Chapter 143 of the General Laws of Massachusetts. Briefly, they provide that the Board of Standards in the state Department of Public

(*Continued on page 128*)

Richly styled interiors call for flooring materials and designs that add to the feeling of elegance established by the general architecture and furnishings. The high style of this entrance lobby is further emphasized by the lustrous sheen of the rubber tile floor.

and rich appearance make it suitable for high-style floors. The exceptional durability of Linotile, on the other hand, makes it a material to consider whenever a floor must have the ability to withstand heavy store traffic.

PERIOD STYLING

Interiors designed to reflect specific period styles call for special consideration in flooring. The resilient tiles and certain types of linoleum, especially the jaspés, Marbelles, and some of the embossed inlaid patterns, are ideally suited for period styled interiors such as 17th Century and Early American Colonial. For example, plain colored asphalt tile can be laid in random "flagstone" designs for a suitable floor to enhance the effect created with pine panelled walls and beamed ceilings. Brick patterns in embossed linoleum also are desirable for this type of interior.

SPECIAL EFFECTS

Elaborate restaurants, cocktail bars, theatres, and other types of interiors often require "showmanship" in decoration. Such interiors call for floor designs seldom used elsewhere. But whether the atmosphere is refined or flamboyant, it can be met in any of the resilient tiles as well as in the plain, jaspé, and Marbelle linoleum floors. Striped or zigzag floor designs can be created in highly contrasting colors for brilliant effects.

Special insets can be worked out in resilient flooring materials, too. Names, initials, trade-marks, or decorative characters of any type can be installed right in the floor. Today, it is not unusual for hand-cut insets to contain as many as several hundred small pieces in many colors.

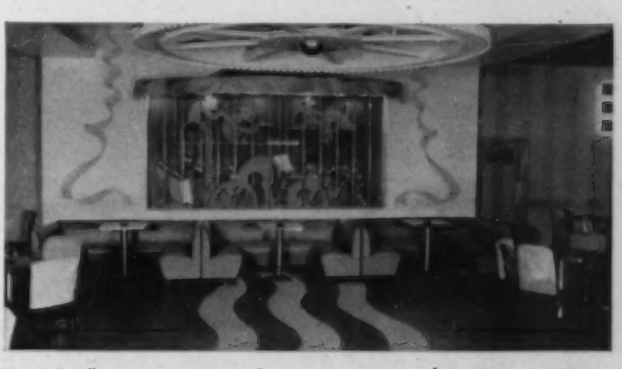
Resilient floors also offer unusual opportunity to plan designs that separate departments in a large store. And with directional lines or sweeping color contrasts these floors can help to direct the general flow of traffic to areas that otherwise get less attention.

For practical assistance in the specification of resilient flooring and suggestions for floor design, contact any of Armstrong's District Offices or write directly to Armstrong Cork Company, Floor Division, 2409 Duke Street, Lancaster, Pennsylvania.

Smart designing applied to floors of linoleum and asphalt tile can give to these floors a richness suitable for commercial architecture of unconventional style. Here, the design in the floor of asphalt tile follows the contours of the display counters for unusual effect.

Tavern-style and other interior decoration employing paneled or beamed treatments on walls and ceilings call for "rustic" floor effects which can be obtained with brick patterns in embossed linoleum. Random designs in the resilient tiles also can be used.

Custom cut insets in resilient flooring materials help advertise a business. Decoratively styled to accentuate the floor design, smart insets create an impression that's remembered by customers. Names, monograms, and trade-marks can be copied in any resilient floor.



Special effects in resilient floors are almost without limit. Spectacular interior decoration can become fully effective through floor designs. Brilliant colors can be used as in this linoleum floor with a brown field and orange and canary yellow serpentine bands.

Complete wall of Satinol Louvrex lets light filter from reception space to conference room. Offices of Robert Gruen Associates.

Interior window glazed with Satinol Louvrex assures privacy plus light. Designed by Robert Gruen Associates.

GAIN LIGHT...

through Walls as well as Windows

● To diffuse light generously . . . to borrow light from one room for another . . . designers and decorators choose *Patterned* Glass.

Clear or *Satinol*-finished, this fine glass lets light filter through freely . . . yet its distinctive patterns obscure the view, making *Patterned* Glass completely practical for light-transmitting panels, partitions, or entire walls.

Blue Ridge *Patterned* Glass is available in a wide range of linear, square or all-over patterns to add a sparkling look of luxury to modern or period settings. Consult your nearby L·O·F Glass Distributor. Write for our *Patterned* Glass Modernization book. Blue Ridge Sales Division, Libbey·Owens·Ford Glass Company, 297-A Nicholas Building, Toledo 3, Ohio.

BLUE RIDGE Patterned GLASS

FOR SOFT, DIFFUSED LIGHT • SMART DECORATION • COMPLETE PRIVACY

Lighting Panels that make your eyes light up

BullDog lighting panelboards combine efficiency with visual appeal to make your eyes light up in appreciation of smart styling and progressive engineering.

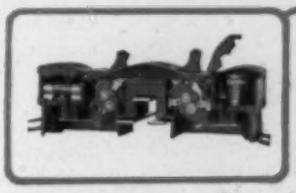
BULLDOG SUPERBA PANELBOARDS

BullDog's SUPERBA Panelboards meet the combined need for beauty and utility in offices, stores and commercial buildings.

Standard SUPERBA features interlocked fuse doors to provide an added safety factor, since fuses are always "dead" when accessible.

Modified SUPERBA incorporates all advantages of the Standard Model, except that it is intended for installations where *electricians* will replace fuses and, for that reason, does not require interlocked fuse doors.

Both offer the exclusive OMNI-bus feature, permitting balancing of loads without removing the cabinet door or trim, or disturbing wiring connections. Heavy-duty toggle switches, with quick-make and quick-break action, minimize arcing and burning to insure longer life and lower maintenance costs. Cartridge fuse ejectors are integral in the design.



Cutaway view of Standard SUPERBA phenolic unit featuring OMNI-Bus bars, rugged toggle switches, cartridge fuse ejectors—all adding to the appearance and utility of this lighting panel line.

BULLDOG ROCKER TYPE PANELBOARDS

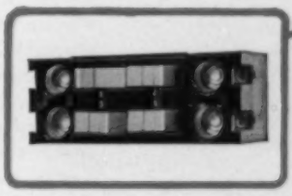
With BullDog ROCKER-TYPE Panelboards, ruggedness comes first.

These panelboards are designed particularly for factory use, where appearance is secondary but where circuits are apt to remain under load "around the clock."

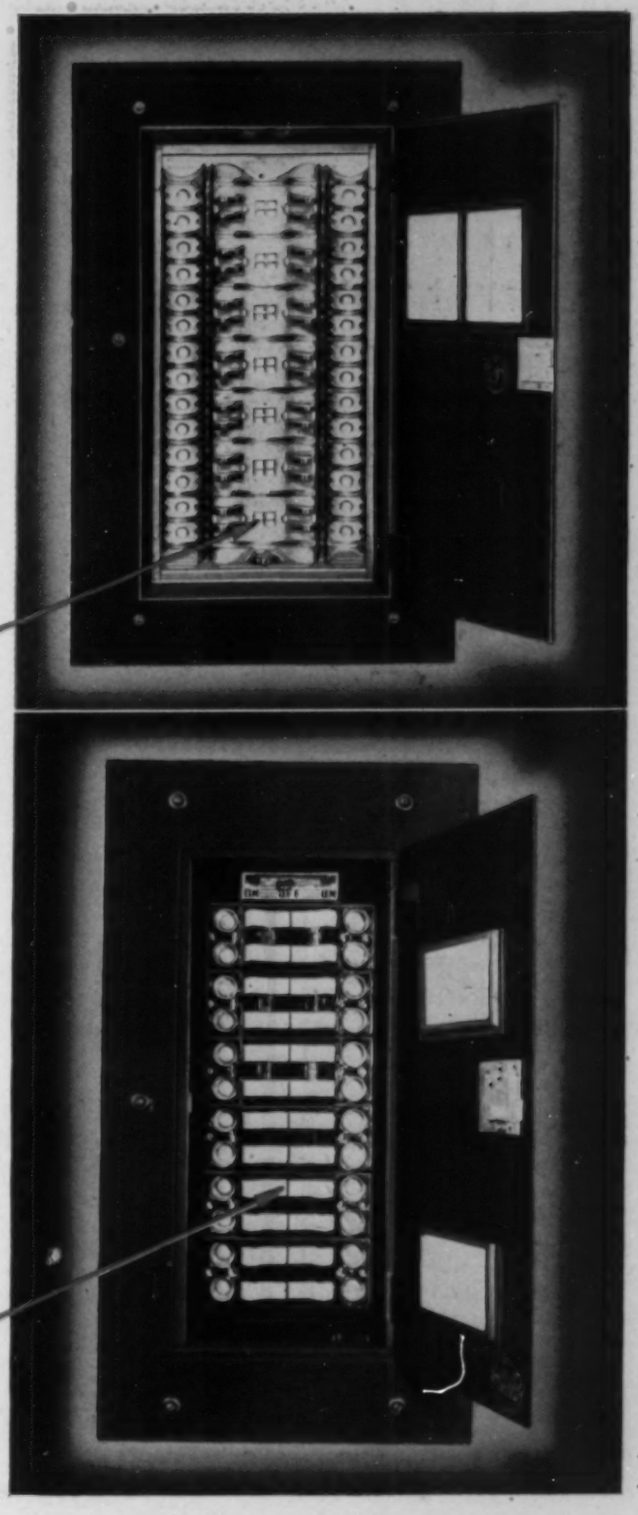
Branch circuit units are sturdily designed of porcelain—the best insulating material known to the electrical industry. Porcelain is arc-resisting, non-carbonizing and non-tracking.

Switches are designed to reduce handle breakage. Quick-make and quick-break action, and friction-free knife edge bearings cut maintenance costs.

For full information on BullDog SUPERBA or ROCKER-TYPE lighting panelboards, call your BullDog Field Engineer. Or, write BullDog direct for folders.



Cutaway view of ROCKER-TYPE porcelain unit designed for rugged durability, maximum dielectric strength and heat resistance plus simplified switch mechanism with unbreakable rocker handles.

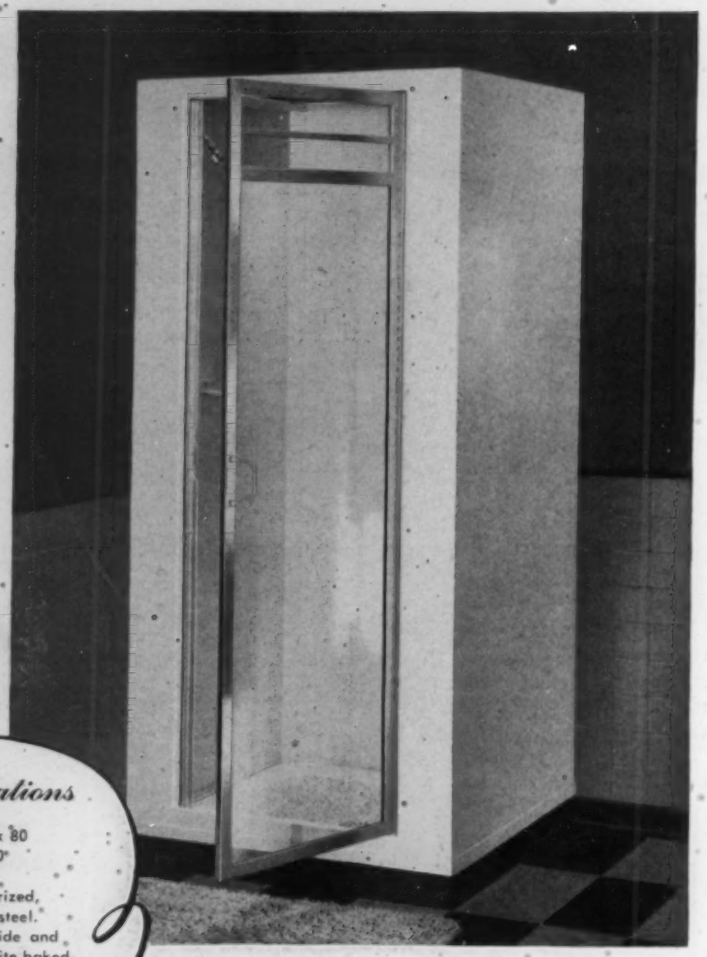


BULLDOG

ELECTRIC PRODUCTS COMPANY

BullDog manufactures Vacu-Break Safety Switches—SafToFuse Panelboards—Superba and Rocker Type Lighting Panels—Switchboards—Circuit Master Breakers—"Lo-X" Feeder BUStribution DUCT—"Plug-in" Type BUStribution DUCT—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for portable tools, cranes, hoists.

Detroit 32, Mich. Field Offices In All Principal Cities. In Canada: BullDog Electric Products of Canada, Ltd., Toronto.



Specifications

SIZE—32 x 32 x 80
36 x 36 x 80"

WALLS—Bonderized, galvanized steel. Finished inside and out with white baked-on synthetic enamel.

RECEPTOR—Semi-flat type Pre-cast terrazzo or Artex, non-slip, leakproof, non-absorbent. Brass drain for 2" waste connection cast integral with receptor

VALVES—Individual compression valves with arm and shower head.

Cadet

...with Zephyr Door A shower bath, representative of the best quality in cabinet construction available to the plumbing trade today. Recommended for installation in the better class of homes, institutions, hotels, and clubs. The Fiat Cadet Shower and Zephyr Door are products of fine workmanship and design, in harmony with modern bathroom architecture.

Fiat

Metal Manufacturing Company

Chicago 13, Illinois

Long Island City 1, N. Y. Los Angeles 33, California

In Canada—Fiat showers are made in Canada by The Porcelain and Metal Products, Ltd., Orillia, Ontario

REQUIRED READING

(*Continued from page 28*)

If there is a whole-hearted cooperation among federal, state and local officials, national regional, state and local hospital associations and individual hospital executives, this country will benefit materially in the most comprehensive hospital and public health construction program ever undertaken.

WARTIME BUILDING

American Miracle: The Story of War Construction around the World. By Van Rensselaer Sill. New York 16 (386 Fourth Ave.), The Odyssey Press, Inc., 1947. 6 by 9 in. xvi+302 pp. illus. $4.00.

Anyone who ever has been even remotely connected with the construction industry will thrill to the story told so factually by Mr. Sill — a story familiar to most of us in general outline, but new and exciting in detail.

This is the story of the $49 billion construction miracle which men and women, civilians, Navy Seabees and Army Engineers contrived from the dark days of 1940–41 through the second quarter of 1945. It is the tale of the bulldozer, the scraper and paver, of the Alaska highway, of the gigantic war plant, the Pacific air bases, the cantonments, the shipyards, of bombed ports restored to use in incredibly fast time, of repaired railroads and rebuilt bridges. All of it done under the stress of an urgency never before known: "Every job, every war plant, cantonment, shipyard, had to be finished in almost miraculous time — sometimes ten and twenty times faster than normal peacetime construction." War plants went up so fast that "in five years we doubled the productive capacity of the country." On the last lap of the long road to Berlin, American construction men threw up a heavy-duty railroad bridge across the Rhine in ten and a quarter days.

Personalities are kept rigidly out of the story because this is not a book about the few who made the headlines but one concerned with the "little people" who by and large did not. There are surprisingly few exclamation points; facts are allowed to speak for themselves, backed up by a section of war construction reports from various government agencies and another of statistics. When romance creeps in it is not of Mr. Sill's doing: the Army Engineer calmly pipelaying 500 yards out in front of his own front line, the Seabee driving his dozer over a Jap pillbox at the height of landing operations to put out of commission a twin-mount 37 mm. gun and 12 well-armed Japs, wrote their own romance into Mr. Sill's quiet chronicling.

(*Continued on page 126*)

ARCHITECTURAL

RECORD

WHAT ABOUT THOSE BUILDING COSTS?

YOU constantly hear that building is a costly business these days. It is. Building costs, and all other costs, have risen in this period of inflation. So many plans are put on the shelf or "held in abeyance" when estimates come in from contractors. We all wait hopefully for building costs to come down so more of our clients can afford to build.

There seems to be little that any one factor in the industry can do about lowering costs. But at least there is one constructive move being made — the study of possible economies in house design and construction techniques sponsored by the Producers' Council and the National Retail Lumber Dealers Association. (See page 74.)

This study, with its educational program, is a step in the right direction. Its effectiveness will depend on the extent of its adoption by architects and builders, and also on the intensification and continuation of its research projects. The industry itself has got the jump on those who advocate government research to improve techniques and lower costs. Congressional investigations with their hearings this fall may show the need for more all-embracing measures than modular design and dimensional coordination. At best, the latter, good as they are, can effect only small percentages of savings. They will be most effective only when contractors must figure closely, sharpening their pencils for real materials lists and man-hour estimates, in order to get the jobs on lump-sum or upset price bids.

We must face the fact that building, along with the rest of our economy, is still in an upward spiral of postwar inflation. War waste has always been "paid off" by inflation. And we are still in the cycle of higher wages and higher prices. Nor are we likely to come out of it this fall, what with the cashing of G. I. bonds, the resumption of uncontrolled installment buying, and the unbalance of exports over imports. With next year an election year, political expediency will dictate continued "prosperity" and the reduction of income taxes with its inflationary effect.

However, we must realize that all things are relative and that building costs are not necessarily out of line with other costs. Figures may be had that prove that fewer man hours of the farmer's time, or the mechanic's, or the miner's, are needed to pay for building his home, and a better home, than ten or fifteen years ago. All the factors in the building field will do well to emphasize the fact that the building dollar will buy as much relatively, as the food, clothing, transportation or any other dollar. And the truth of the matter should be brought out in the Congressional hearings to restore public confidence and encourage more building at the new level.

Kenneth K. Stowell
EDITOR

the Tompkins house

HEWLETT HARBOR, LONG ISLAND

Marcel Breuer

ARCHITECT

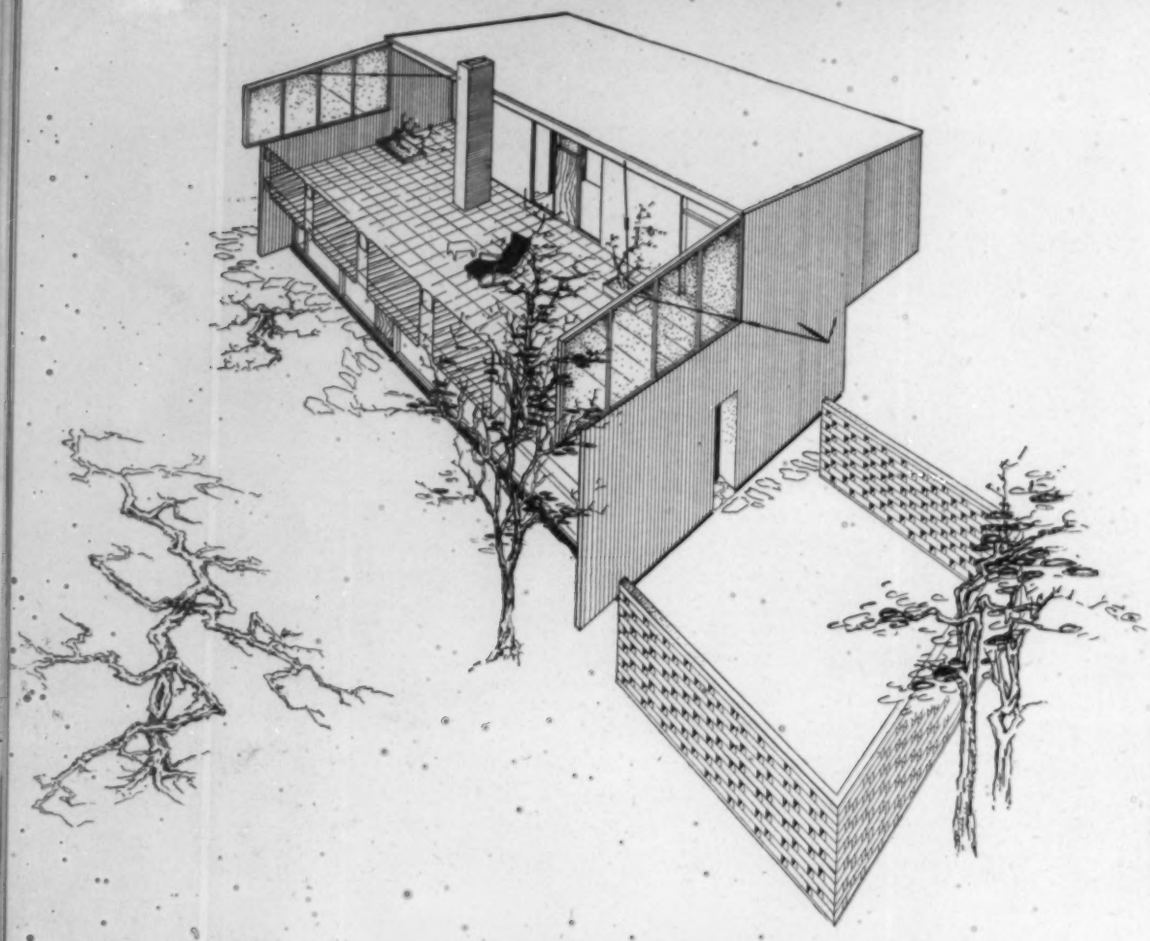
BECAUSE everything about this house is so logical, so straightforward, so ingeniously simple and so all-of-a-piece, a casual beholder might miss the imaginative thoughtfulness that went into its design and construction. From orientation and plan down to the last detail, its purposes are achieved directly, simply, efficiently — with a skillful choice and use of materials and a deft sureness in scale and proportion.

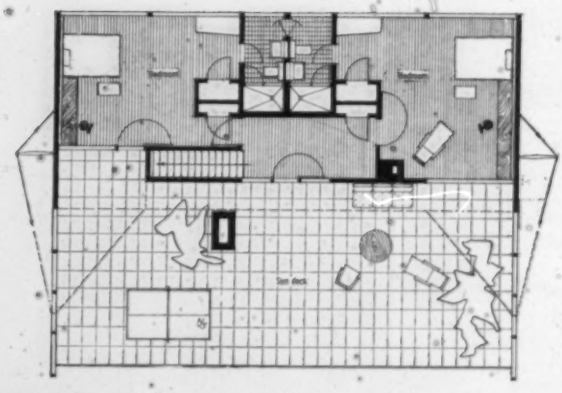
The house is spacious without being large because of the openness of its plan and its extension into the out-of-doors. By cleverly cantilevering the second story, a gracious outdoor living terrace is obtained on the upper level and at the same time a necessary car shelter is provided below.

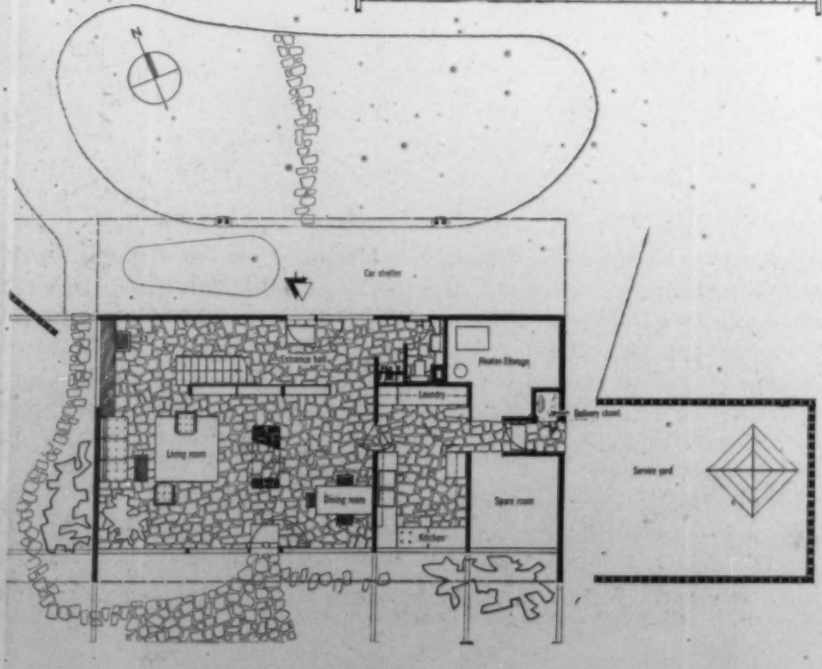
Color is used daringly and successfully to make the house blend with the sky and the landscape — cobalt blue, bright yellow, white, coffee brown, and shades of gray.

A careful analytical scrutiny of the design in detail will be rewarding in revealing both the forthright logic and the sensitive handling of "the simplest means to the desired ends."

Ezra Stoller Photos

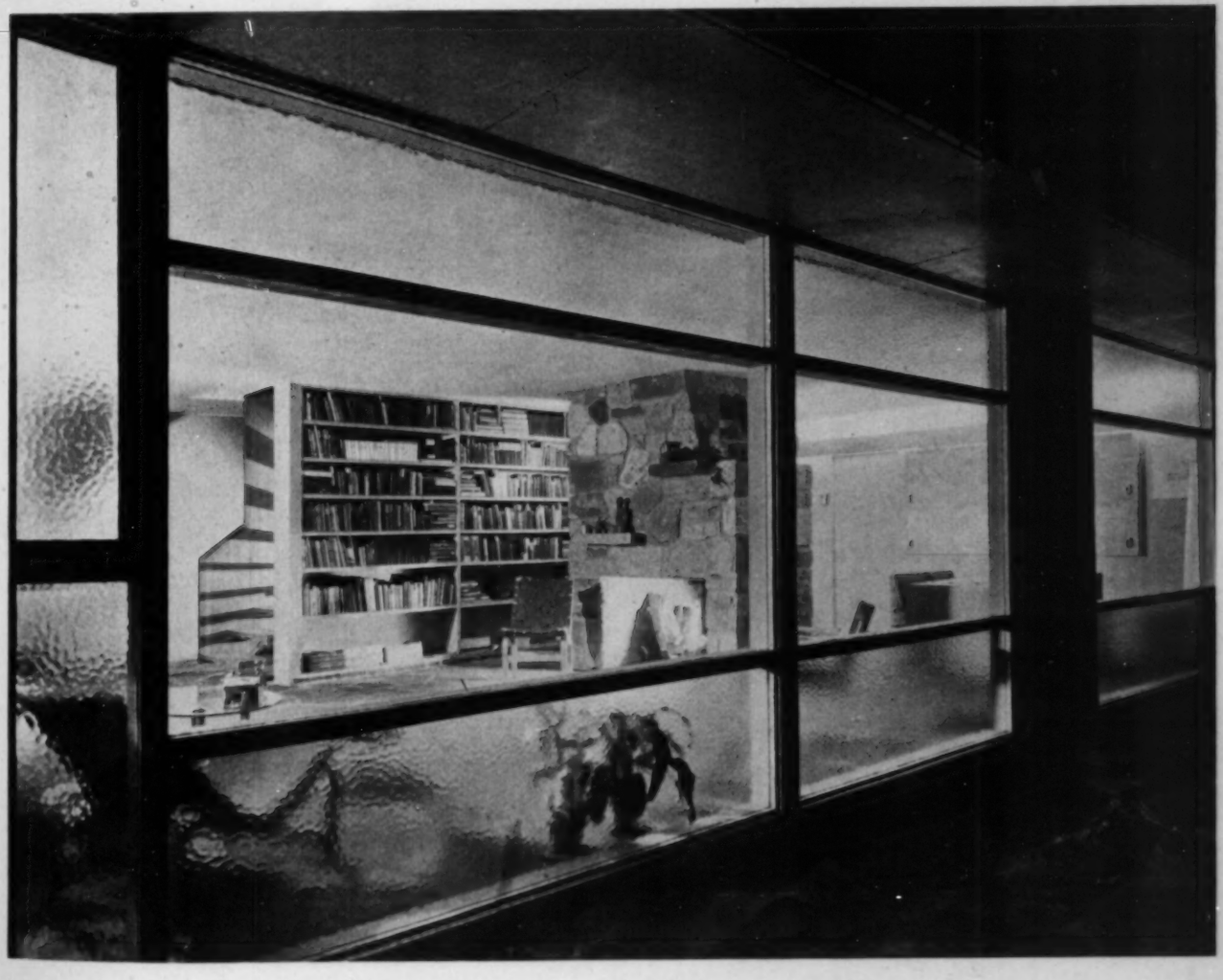






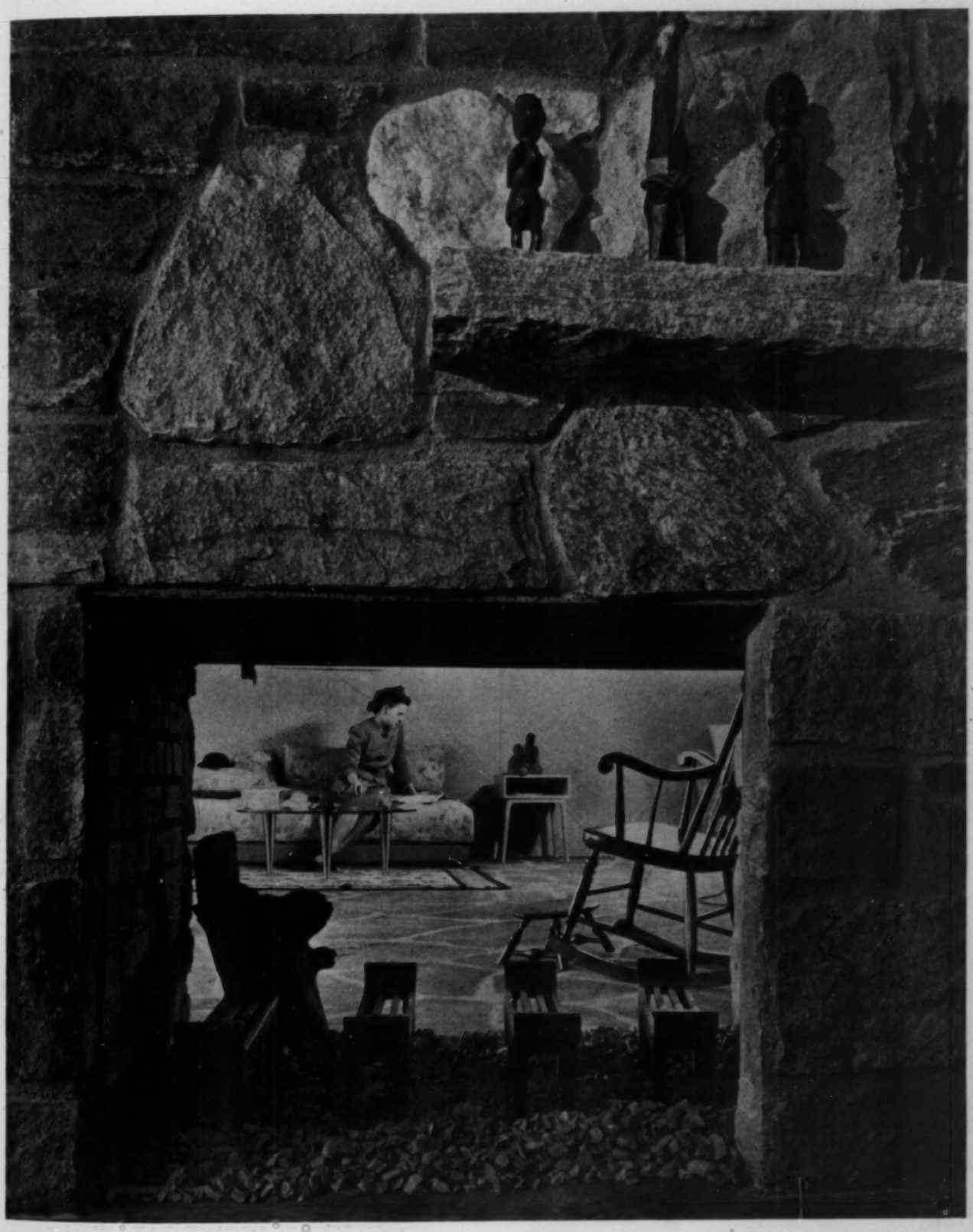
In supporting the cantilevered second story, the walls are developed as trusses by utilizing the ⅝-in. plywood sheathing as an integral "stressed skin" element of the structure.

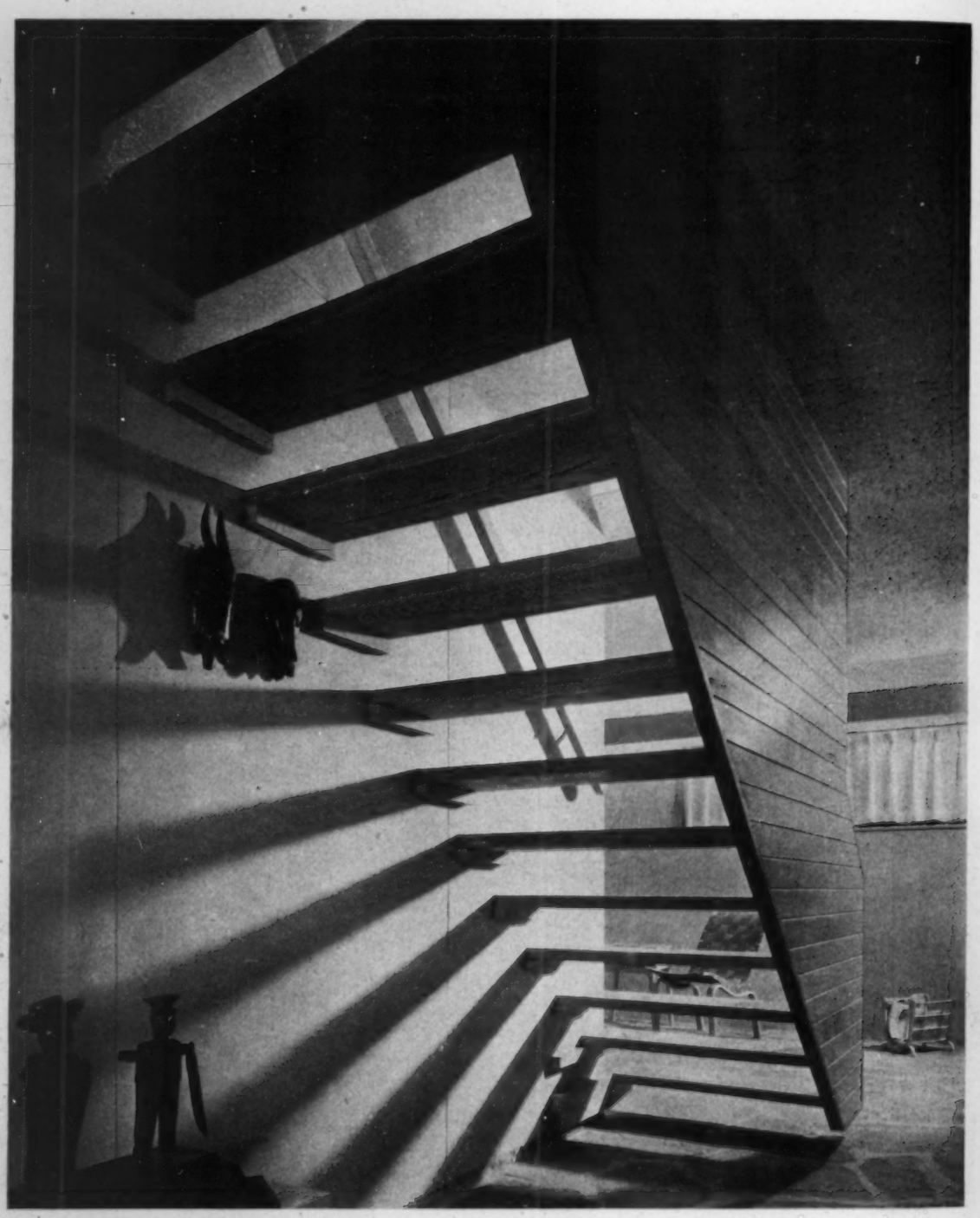
Perspective and planning show auxiliary glazed shields (with their tension braces) for additional protection and privacy

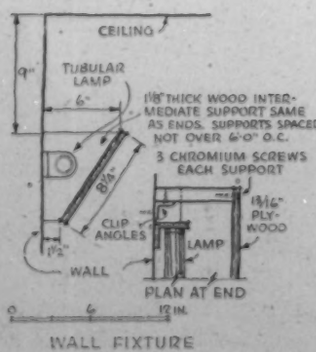


The two-way fireplace separates the living and the dining areas so that the cheer of a single fire can be enjoyed from either or both sides. The bookcase wall divides the living-dining area from the entrance hall and stair. The open planning provides for a maximum expanse of view to the south

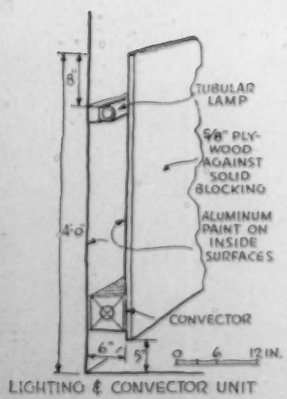
Looking through the double-duty fireplace from the dining to the living area. Winter heating is provided by a split system which supplies hotter water to the coils of the convector system of the second floor than is needed for the concrete-embedded coils of the radiant system of the ground floor. Temperature controls are automatic and thermostatic. Advantage is also taken in living and dining area of solar radiation through the large windows to the south



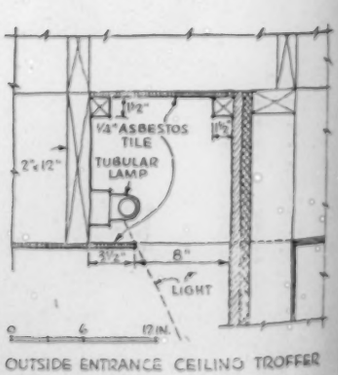




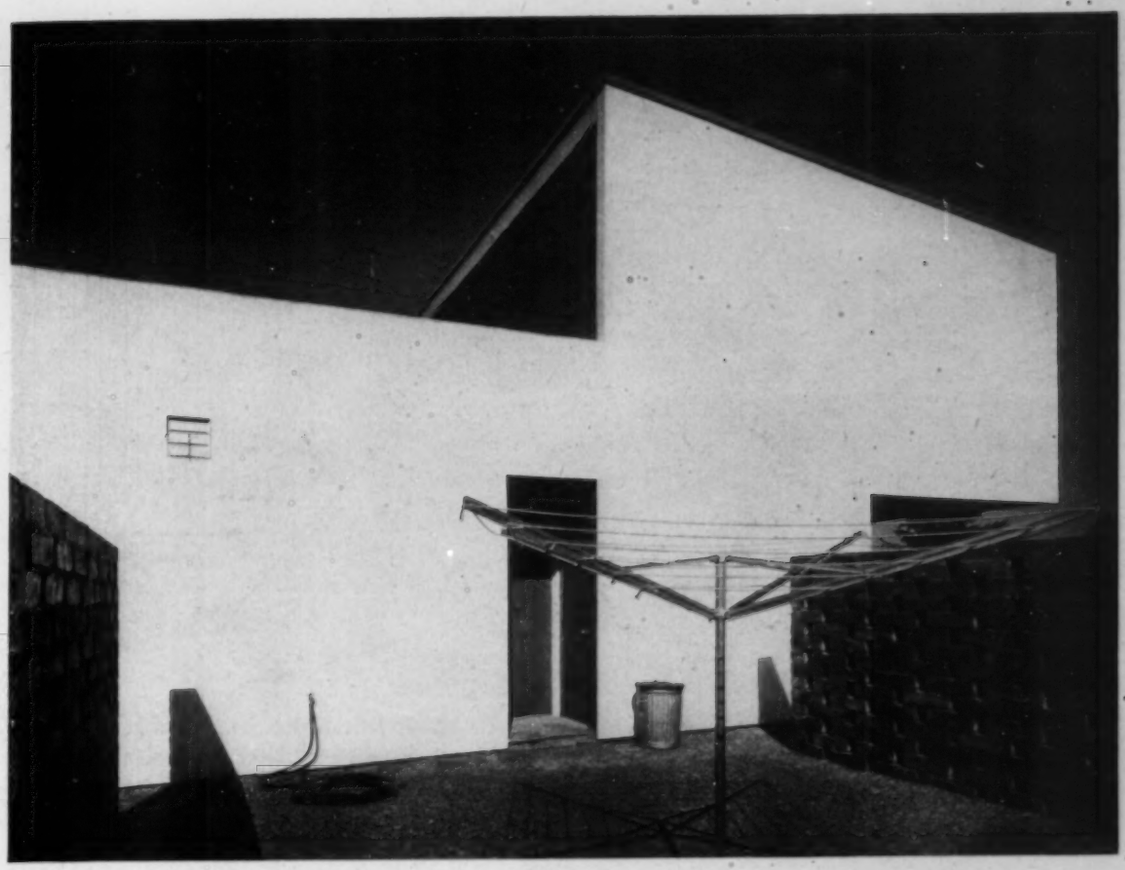
WALL FIXTURE

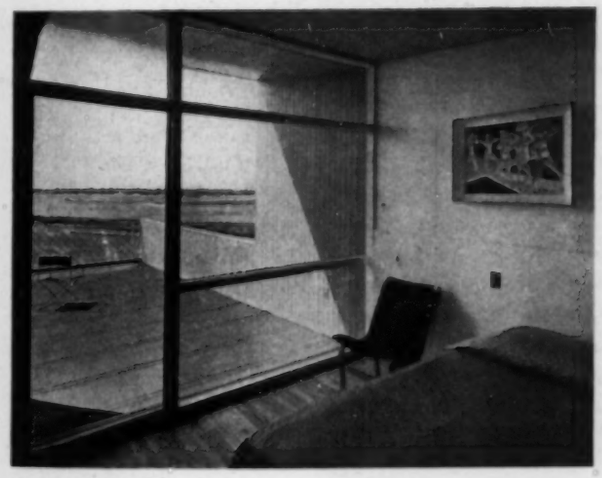


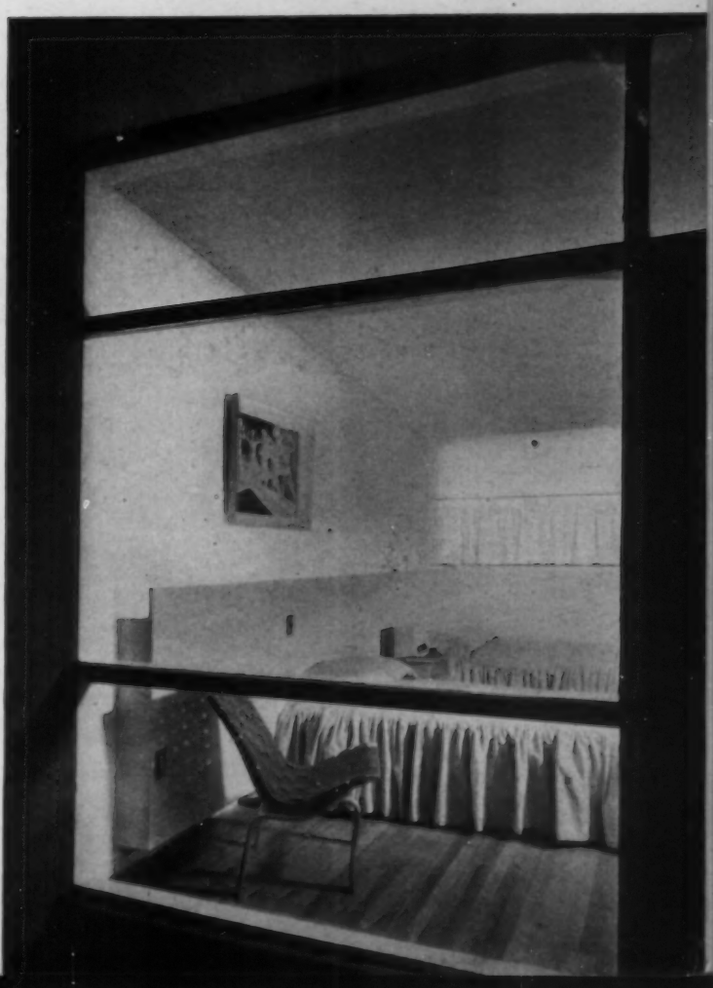
LIGHTING & CONVECTOR UNIT



OUTSIDE ENTRANCE CEILING TROFFER

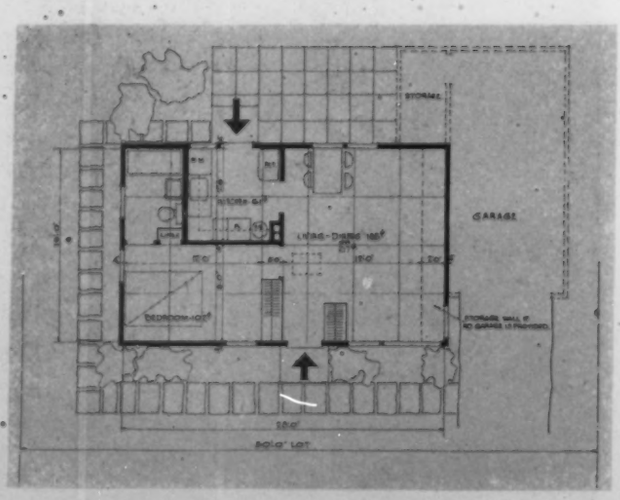






The open tread stair is supported on one side by the back of the bookcase and on the other side by the paneling suspended from above. . . The detailed drawings show simple but most effective details of the indirect lighting. The lighting-and-convector unit is shown also in the illustration (right) . . . The service entrance has an outside delivery closet from which meters can be read without entering the house

THE INDUSTRY



The basic one-bedroom house, 16 by 28 ft. interior dimensions, was designed to meet FHA minimum requirements. Dotted lines show possible added garage and storage

THE impressive title of this project, "The Industry Engineered House," might have several widely different connotations, so a word of explanation to the architects and designers is in order to prevent any possible misunderstanding.

In the first place, this is not a plan for a single house, or even a group of houses. It is rather a research study and a practical program to determine how houses can be both designed and built to perform their functions with the least waste of time, material and effort.

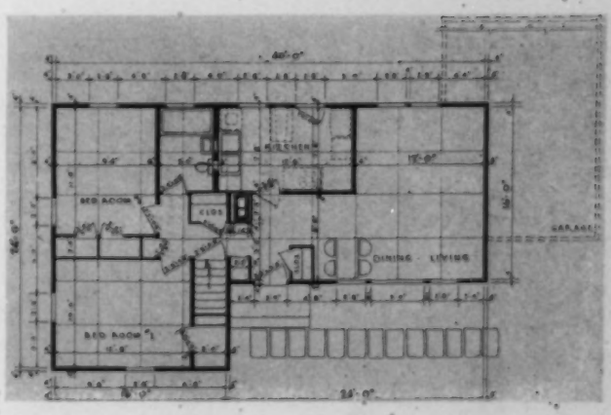
It is a project to determine and demonstrate the best possible ways of designing houses on a modular basis so that the assembly of standard available building products will be most efficiently and economically coordinated. In this sense perhaps, it is "*engineered*," for engineering might be defined as "the scientific determination of the best means to the desired end." Actually, the study was developed under the direction and supervision of architects and reflects the normal logical approach.

It is "*industry* engineered" for it is industry-wide in its development and in its application. It is not limited to any one particular type of material or equipment, but rather considers *all* that are currently available as standard items. It is "industry engineered" also in the sense that it is sponsored by the two organizations in the building industry, the Producers' Council and the National Retail Lumber Dealers Association, and has had the benefit of the thought and experience of experts from all phases of the industry — architects, engineers, builders, manufacturers, dealers, contractors, artisans and consumers.

Architects active in the field of home design should profit by the results of the research undertaken because the principles and the procedure are as applicable to their design and supervision as they are to any other factors in the home-buiding field.

TRY ENGINEERED HOUSE

By Gordon Lorimer



The single story L-plan, two 16- by 24-ft. units, is flexible and adaptable; many variations are possible without basic changes. It can be placed on a 40-ft. or 60-ft. lot if the garage is in the basement. Perspectives show possibilities of basement or ground level garage locations

Not a Plan Service

The basic idea has been and is to develop plan design and construction techniques that will bring about closer integration and better organization in the home building field. While it was necessary to develop and utilize specific house plans in order to demonstrate the possibility of improved techniques, these plans are purely incidental to the basic final objective as stated. The designs and plans, therefore, shown here are merely the first examples of what can be done to further the economy and efficiency of small house design and construction rather than any attempt by the sponsors to inaugurate a plan service. They are demonstrations of the application of principles, not stock plans.

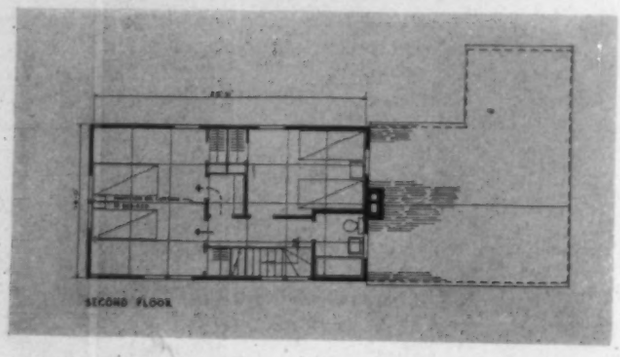
Standard Available Materials and Equipment

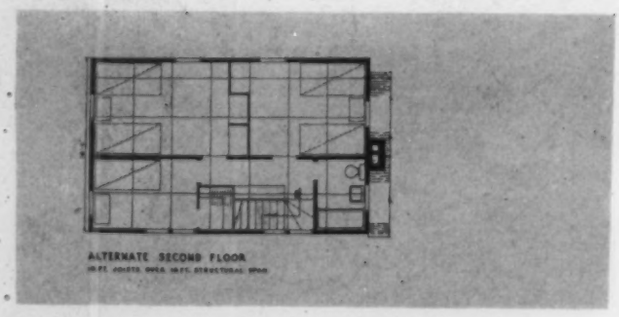
This project is not an attempt to "revolutionize" the home building industry, but rather to coordinate the materials which are now available in stock sizes and types by the simplest, most direct methods of assembly.

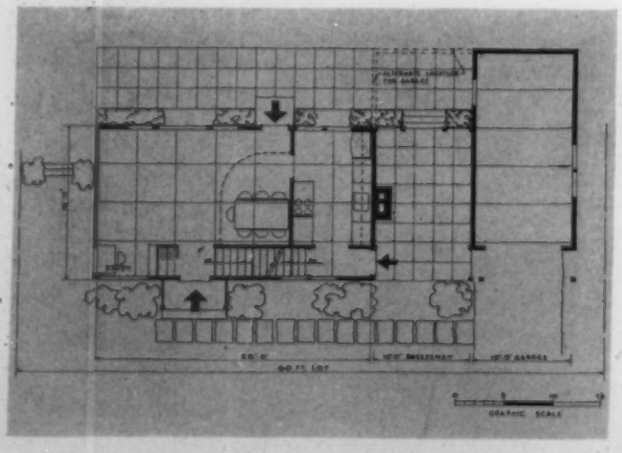
A survey just conducted shows that the manufacturers of practically all materials and equipment have stock and standard items that can be incorporated in "industry engineered" houses.

The project takes advantage of most of the known and practiced techniques for time and labor saving, and for organizing and coordinating the work so that these stock materials will be assembled together with a minimum of cutting and fitting. This means maximum economy and lowest possible cost to consumer.

Naturally these studies in the assembly of various stock materials will show the possibility for further standardization of many items and may indicate that modification in certain sizes and details can be made in the interest of ease and simplicity of assembly. This, in turn, will permit manufacturers to concentrate on items which fit best into the pattern, and this concen-







A two-story house, 16 by 28 ft., with either two or three bedrooms (see alternate plans). Note that 18-ft. joists are used over 16-ft. structural span in three-bedroom scheme. Minimum roof and foundations make this two-story home the most economical for a given floor area

tration will mean greater mass production of those particular items. Mass production means lower manufacturing costs, and also savings in inventories both at the point of manufacture and in the dealers' yards. This should also mean a more prompt and steady flow of materials. Further, it may well indicate economies through packaging of materials and in some cases an increased amount of pre-assembly of materials prior to delivery at the site.

Proof of the Pudding

The months of effort in the study of materials and their coordination in plan must stand the test of practical application. Therefore, arrangements have been made to construct several test houses, and these houses are now under construction at Urbana, Illinois, under the supervision of the University of Illinois Small Homes Council. Three frame and three masonry houses will be erected consecutively. During the construction of each, careful study and analysis will be made of erection techniques, with any improved methods derived from the observations to be applied to the next house. After careful analysis of results, man-hour schedules for each operation will be made available to the building industry, not necessarily as a final answer, but as something in the nature of a target at which to shoot in future efforts by individual builders.

It is hoped that there will be sufficient industry-wide interest that local builders may accept such information as somewhat of a challenge, and attempt better standards in their own work. Where such further improvements are reported, it is the intent of the Technical Committee of the Producers' Council to follow up with further investigation and analysis, and in turn make that available to the industry at large. It is this industry-wide form of collaboration from prime manufacturers right through to the ultimate site labor that forms the real basis for the name "Industry Engineered House." To date, the building industry has been a somewhat loose and quite complex aggregation of individual efforts and interest. This voluntary pooling of information and "know how" is a very significant indication of a growing industry-wide unity.

Design and Construction Principles

The principle of modular design and dimensional coordination was adopted at the outset, the A.S.A. 4-in. unit and the 4-ft. planning grid both horizontally and

vertically (inside dimensions) to eliminate cutting and fitting of sheet materials.

In American domestic architecture, the 4-in. unit has been a significant dimension for many years due to the early selection of 16-in. and 24-in. stud and joist centers for frame construction. This has led to the development of sheet board materials in 4-in. multiples, such as 48 by 72-in., 96-in., 120-in., and 144-in. Many plaster bases come in 16- by 48-in. sizes, while insulating blankets and batts have been developed to fit framing at 16-in. and 24-in. centers. Today, practically all available stock windows in wood and metal are coordinated to 4-in. increments, or multiples thereof.

Selection of 4-ft. Unit

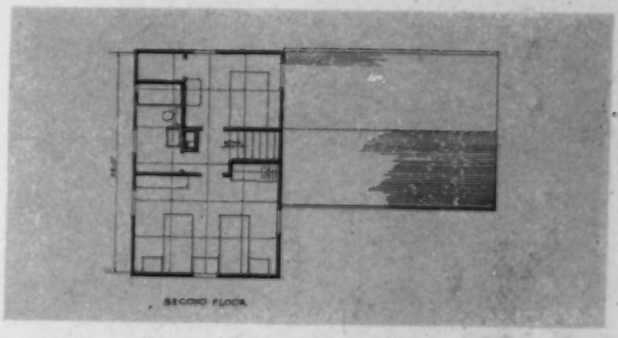
As the sheet materials referred to above have common dimensions of 4 ft., it was found advantageous to design with a 4-ft. plan grid, and to enclose such spaces with whatever wall combination was desired for each individual case. Detailed development of the plans has shown that this basic planning assumption produces the minimum of cutting of interior finishes. Similarly, panelization of the exterior is efficiently possible, provided a corner post or cover plate detail is devised to compensate for wall thicknesses.

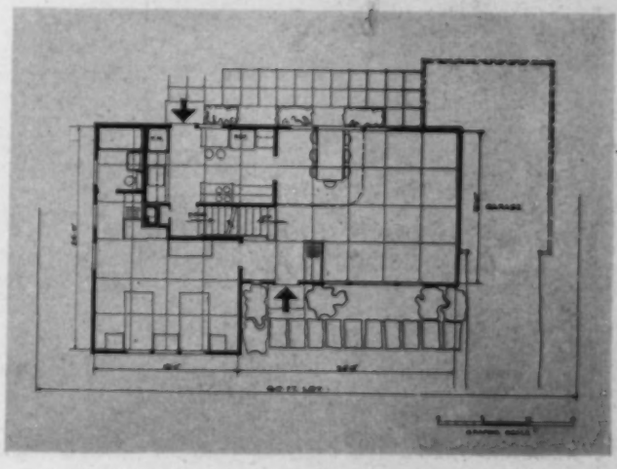
Standard Structural Span 16 ft.

Analysis showed 2- by 10-in. floor joists to be readily available and capable of meeting most code and FHA requirements at 16-ft. span, without intermediate girders or footings. Coincident with this is the fact that 16-ft. clear span is the minimum dimension at which a proper single-run stair can be run in the direction of the span, with an adequate landing at each end. The 16-ft. span also permits the use of a very simple tied rafter type of roof truss, readily assembled on the floor, and easily lifted into place by two men. Therefore, this 16-ft. span has been made the controlling element of the various houses developed. It was found that considerable variety in sizes and type was possible while maintaining this span. The same type of analysis, however, can undoubtedly be made by the individual architect in analyzing buildings of different span requirements.

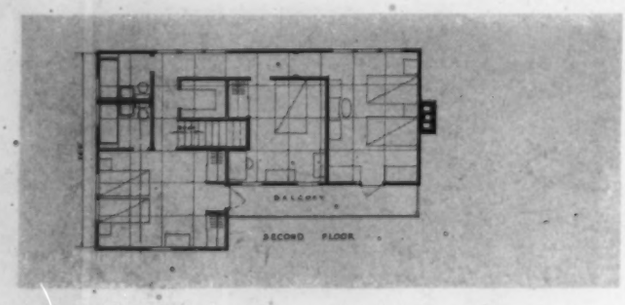
Plan Unit Dimensions

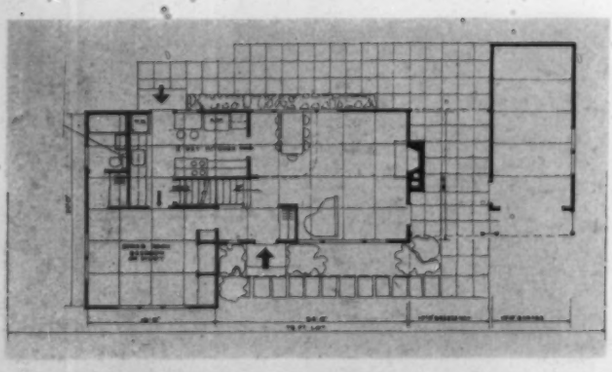
Applying the controlling span dimension of 16 ft. in width by a multiple of 4 ft. in length, major plan ele-





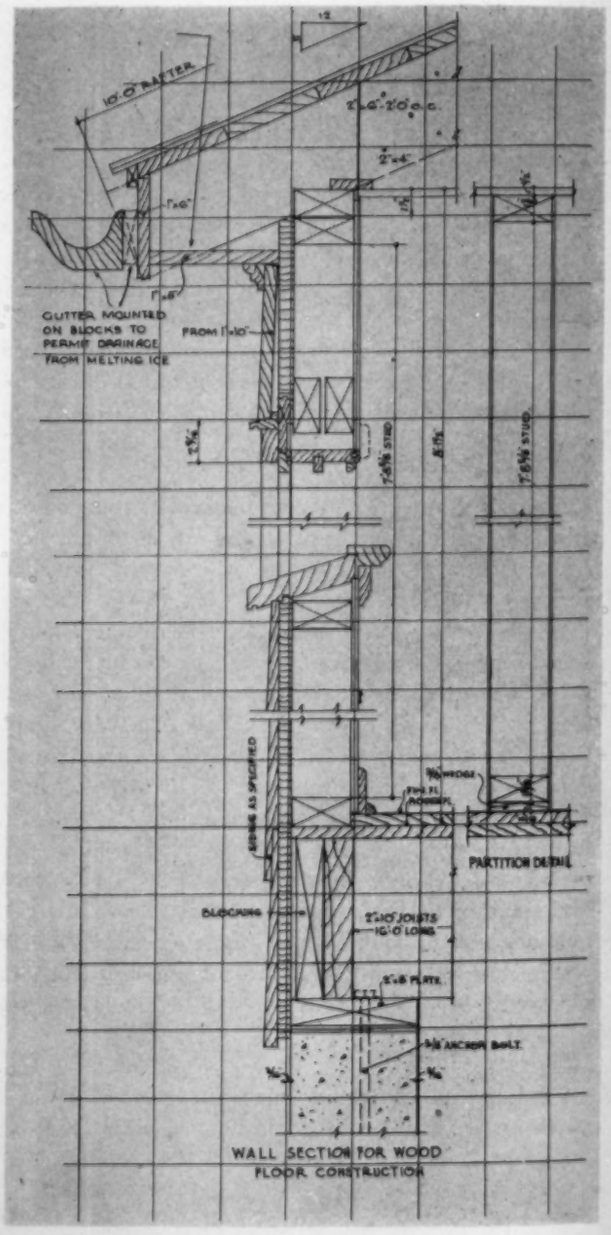
Upstairs bedrooms may be added to the L plan by adding a second story to one of the units of the first floor plan. The added bath comes in position to make plumbing connections economical





Here both 16 by 24 units of the L plan have been given a second story, to provide three upstairs bedrooms. A third bath is added, but still positioned for economical connections throughout

A wall section of a single floor wood frame house. Note the 10-ft. rafters have standardized plate and end cuts. Note interior partitions of 7 ft. 8⅝-in. studs with nominal "2 by 4's" top and bottom permitting partitions to be fabricated horizontally and turned to vertical placing, finally to be wedged tight at base with ⅜-in. wedges



WALL SECTION FOR WOOD FLOOR CONSTRUCTION

ments of 16 by 24 ft. and 16 by 28 ft. were derived, and used in various combinations horizontally and vertically. For example, the first house selected for test development was a one-story house of two 16- by 24-ft. plan units placed together to form an "L" shape.

Vertical Dimensions

For houses having concrete floor slabs, 8-ft. studs are standard, resting on the 2- by 4-in. plate anchored to the concrete foundation wall. For wood floor construction, studs are standardized at 7 ft. 8⅝ in. for both exterior and interior. The reasons for this are apparent from the assembly shown in section on page 78, as sheet or board interior finishes can be used without cutting.

Roof Framing

The standard 16-ft. units are spanned by simple roof trusses 2-ft. on centers, constructed of 2- by 6-in. rafters with 2- by 4-in. ceiling ties supported at the center by a drop hanger to eliminate deflection. The 2-ft. spacing permits the chimney to be placed between trusses without special framing. Flat roofs are as simply framed as the floor.

Windows

While standard double hung wood windows, with spring or patent balances are shown, coordination is possible with fixed, casement or other windows of wood or metal, and any type of fenestration can be accomplished within the modular framework.

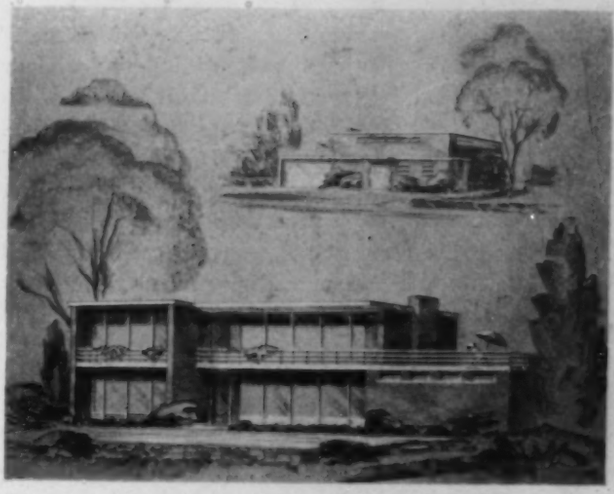
Mechanical Equipment

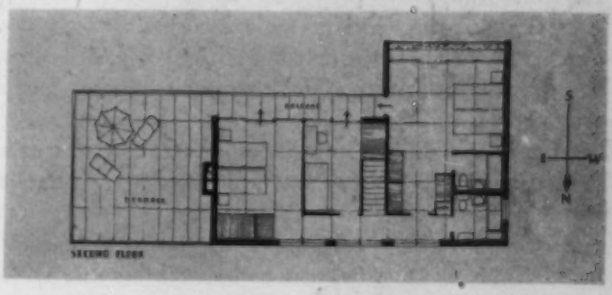
There is recognized economy in a single plumbing system having kitchen and bath back to back and second-floor baths directly over bath and kitchen below. Standardized plumbing sections will permit pre-assembly or prefabrication or the development and use of utility cores, depending on local building codes and labor practices. Codes and practices which are unsound from the point of view of efficiency and economy are subject to change.

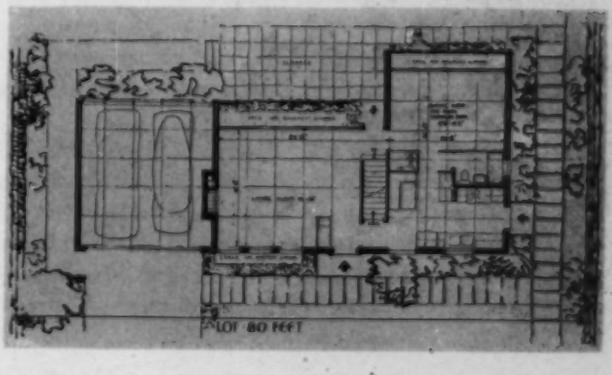
Any desired heating system and equipment may be coordinated with the plans, from small space heaters to radiant coils or ducts. No attempt has been made in these early studies to analyze, select or advocate any particular heating or air conditioning systems.

The conventional wiring and electrical installations have been assured.

It is hoped that the careful analysis and time studies now undertaken at the test houses at Urbana will show the possibilities of further economies both in design and in structural and mechanical assembly methods.







The advocated design and construction principles are adaptable to houses planned for maximum glass areas on their southern sides. The illustrations show a modern "solar" house of modular masonry construction, with the plan developed on the 4-ft. module (interior dimensions). The use of 18-ft. joists over the living room provides both sunshade and balcony leading from all bedrooms to the terrace over the garage

HOUSING AND THE 80th CONGRESS

By Norbert Brown

THE 80th Congress was disposed to consider many problems more pressing than housing — and when it reluctantly had to "do something" it preferred investigation to wholesale legislation and lavish appropriation. Decontrol was the order of the day.

So doctrinaire housing took a walloping in the first session of the 80th Congress. It wasn't knocked out but it was reeling against the ropes when the final bell rang. The battle between realism and housing theory will be continued during the recess and in the rounds of the next session.

Background factors were the obvious failure of the Veterans' Emergency Housing Program, the necessity of modifying controls following the demise of OPA, and the devastatingly critical report of the Housing Committee of the American Legion, largest and strongest veterans' organization.

In the Congress itself sharply contrasting attitudes predominated as between House and Senate. It is perhaps significant that the House was 100 per cent newly elected, while the Senate was only a third newly elected, had a slim Republican majority and a strong leader who had previously accepted housing ideas that originated with the New Deal housing bureaucracy.

Economy minded, the Congress trimmed the appropriations of the housing agencies substantially. Despite the position of leadership of Senator Taft and of his sponsorship, the National Housing Commission bill got very little attention, and beyond the gesture of a favorable 7 to 6 vote by the Senate Committee on Banking and Currency, it might just as well not have been introduced in this Congress.

Aside from the approval of Reorganization Plan No. 3 setting up the Housing and Home Finance Agency as successor to the National Housing Agency, the attitude of Congress toward housing was almost completely negative. The passage of Reorganization Plan No. 3 seemed contradictory to the other things the Congress had done in so far as housing was concerned.

Setting the Stage for Congress

Shortly after the November elections came the 8000-word blast of the Housing Committee of the American Legion against the Bowles-Wyatt veterans' housing program. "The program designed to solve this problem was not concentrated upon in an emergency light. A long-range program designed to treat a chronic condition, rather than an emergency, was planned," said the report. Hence, the committee opposed the Taft-Ellender-Wagner long-range housing bill as "not germane to the veterans' emergency housing situation."

The report asked for the removal or elimination of most controls, elimination of subsidies to manufacturers and prefabricators, and other implements termed by Housing Expediter Wilson W. Wyatt as the "heart" of the program. It was only a matter of days before Mr. Wyatt resigned, after the refusal of his recommended $52,000,000 RFC loan to the Lustron Corporation.

The new Housing Expediter, Frank R. Creedon, coming from the decontrol-minded Civilian Production Administration, within a few days of his appointment, announced that his program had "been worked out within a framework of our policy of relaxing controls as rapidly as possible" and in conformity with the President's housing statement issued on December 14: Priority ratings were abolished; the system of set-asides of materials in the hands of dealers and producers was eliminated; the fixing of price ceilings on houses was dropped, but floor area of dwellings was restricted to 1500 square feet; the prohibition of home building by nonveterans was repealed. Controls were maintained on "deferrable and nonessential" nonresidential construction.

"The emphasis in the new housing program for 1947," said Mr. Creedon, "is on affirmative measures and incentives, rather than on controls." These incentives included premium payments to producers of building materials, guaranteed market contracts for prefabricators, broadened use of insured mortgage financing to encourage building of rental housing for veterans.

The Housing and Rent Act of 1947

Preceded by further relaxation of OHE controls, effective June 1, which eliminated federal permits on housing up to 2000 square feet in area, the Congress late in June passed the Housing and Rent Act of 1947, which, among other things, lifted practically all remaining controls over construction. The Act became law on June 30 when the President reluctantly signed it.

The law has two titles, one relating to construction, and the second to rent control. Title I removed federal emergency controls over all construction, excepting of buildings designed for amusement, entertainment or recreational purposes, which continue to require permits from the Office of the Housing Expediter. It also extended FHA Title VI mortgage insurance to March 31, 1948, authorized FHA insurance of private short-term production loans to manufacturers of prefabricated housing, and gave 30-days' preference to veterans on new houses offered for sale or rent.

The aims of Title II of the Act were the subject of

(*Continued on page 136*)

Mies van der Rohe

MIES VAN DER ROHE

1886	*Born March 27 in Aachen (Aix-la-Chapelle), Germany*
1897-1900	*Attended the Cathedral School in Aachen*
1905	*Moved to Berlin*
1905-1907	*Apprentice in the office of Bruno Paul*
1907	*Built first house as independent architect*
1908-1911	*Employed in the office of Peter Behrens*
1912	*Worked on Kröller house, The Hague, Holland*
1912-1914	*Independent architect in Berlin*
1914-1918	*Served in the army*
1919-1937	*Practiced architecture in Berlin*
1921-1925	*Director of architectural exhibits for the* November-gruppe
1925	*Founded the* Zehner Ring
1926-1932	*First Vice-President of* Deutscher Werkbund
1927	*Director of* Werkbund *Exposition,* Weissenhofsiedlung, *Stuttgart*
1929	*Director of German Section of the International Exposition, Barcelona, Spain*
1930-1933	*Director of the Bauhaus, Dessau and Berlin*
1931	*Director of* Werkbund *Section "The Dwelling," Berlin Building Exposition*
1937	*First trip to the United States*
1938	*Emigrated to the United States*
	Director of Architecture at Armour Institute, Chicago (since 1940, Illinois Institute of Technology)
1944	*Became an American citizen*

THE art of architecture has achieved no higher expression in our time than in the work of Mies van der Rohe. And yet, unlike Le Corbusier, Gropius, Oud, and Wright, he has received relatively little personal or professional publicity. His work, which is on exhibition from September 17 to November 23 at the Museum of Modern Art in New York, has shocked the traditionalists, inspired the imaginative, and made undisputed architectural history. His name is just becoming familiar to the general public. The illustrations for this article are from the monograph on the architect by Philip C. Johnson, published this month by the Museum.

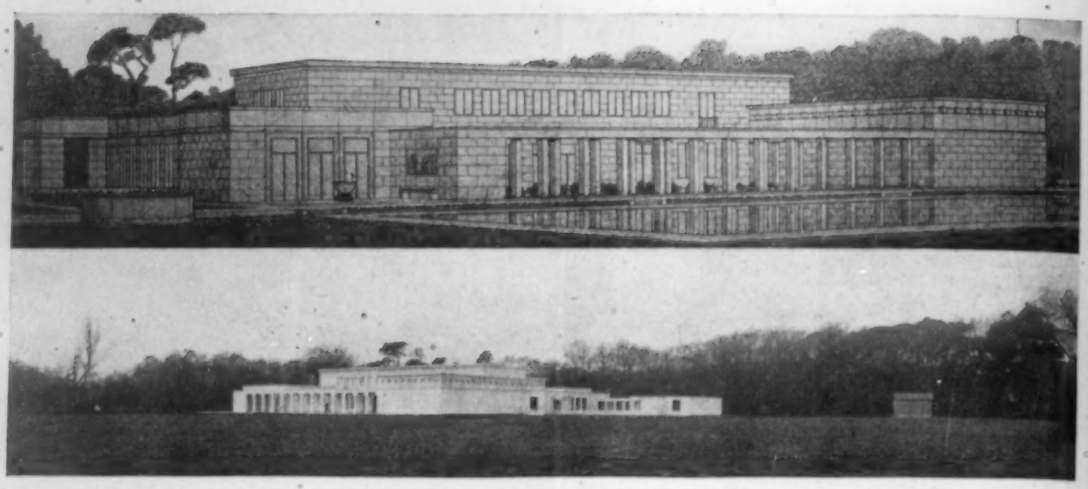
Mies was born in Aachen in 1886. His father, a stone-mason, gave him an early understanding of the materials and craftsmanship of building. As a young man he was influenced by three outstanding architectural pioneers, Peter Behrens, H. P. Berlage, and Frank Lloyd Wright. From Behrens he learned the importance of order and simplicity, from Berlage, the discipline of structural honesty, from Wright the possibilities of a new architecture. During the exciting years of artistic experimentation just after the first World War Mies designed a series of radical, imaginative projects that made him internationally famous among progressive architects and greatly affected the work of the next two decades. In 1926 he was appointed First Vice-President of the *Deutscher Werkbund*, the most powerful influence for quality in modern design, and organized the *Werkbund* Exposition at Stuttgart in 1927. He was Director of the Bauhaus School from 1930 to 1933. Of his executed buildings the most famous are the German Pavilion for the Barcelona International Exposition in 1929, and the Tugendhat house, Brno, Czechoslovakia, 1930. These buildings have already become classics of the modern movement.

In 1937 Mies came to America. As Director of Architecture at Illinois Institute of Technology he is now engaged in the most important large-scale project of his career: the planning of the school's entire new campus.

The buildings of Mies van der Rohe possess a unique purity. The basis of his design is the direct expression of structure. Through studied simplicity of forms and textures and the elimination of the superficial he achieves the ultimate refinement of proportion and shape.

Mies van der Rohe

1912–1926



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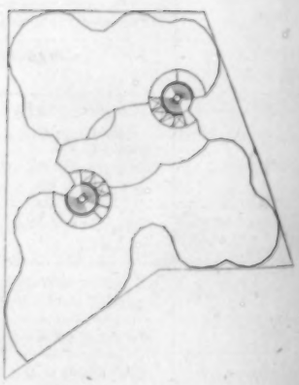

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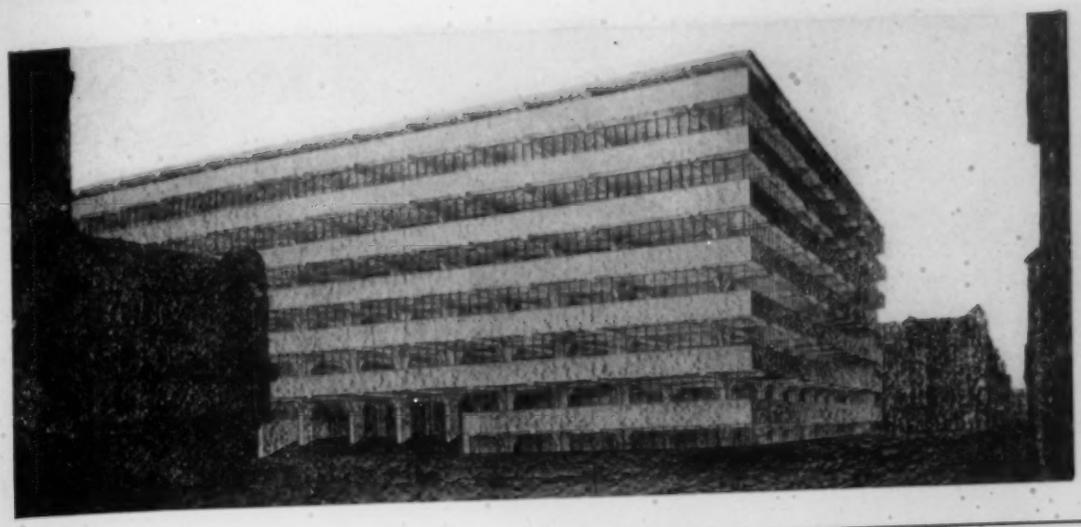
(1) and (2) The Kröller house, the Hague, Holland, 1912, shows the formal asymmetric massing of Mies' early Neo-Classic style. During the period of artistic experimentation just after the first World War Mies discarded all traditional forms in a series of projects of such startling originality that they became landmarks in the history of modern architecture. (3) The 1919 design for an office building on the Friedrichstrasse in Berlin, and (4) the 1920–21 scheme for a skyscraper are glass sheathed steel skeletons of daring simplicity. (5) The 1922 project for a glass and concrete office building is the first, now-classic, example of the cantilevered ribbon-windowed building. (6) and (7) Project for a brick country house, 1923. (8) Project for a concrete country house, 1924. (9) Monument to Karl Liebknecht and Rosa Luxemburg, Berlin, 1926. Photos on pages 82–88 courtesy Museum of Modern Art.



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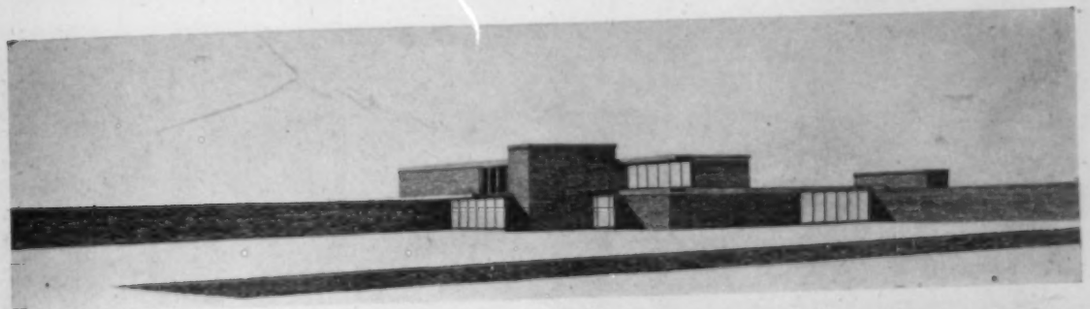

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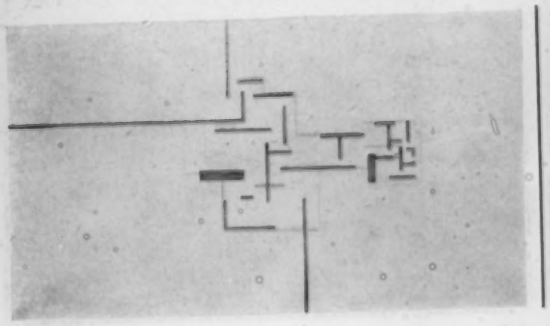

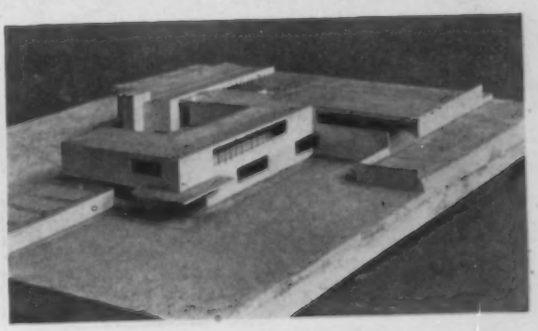

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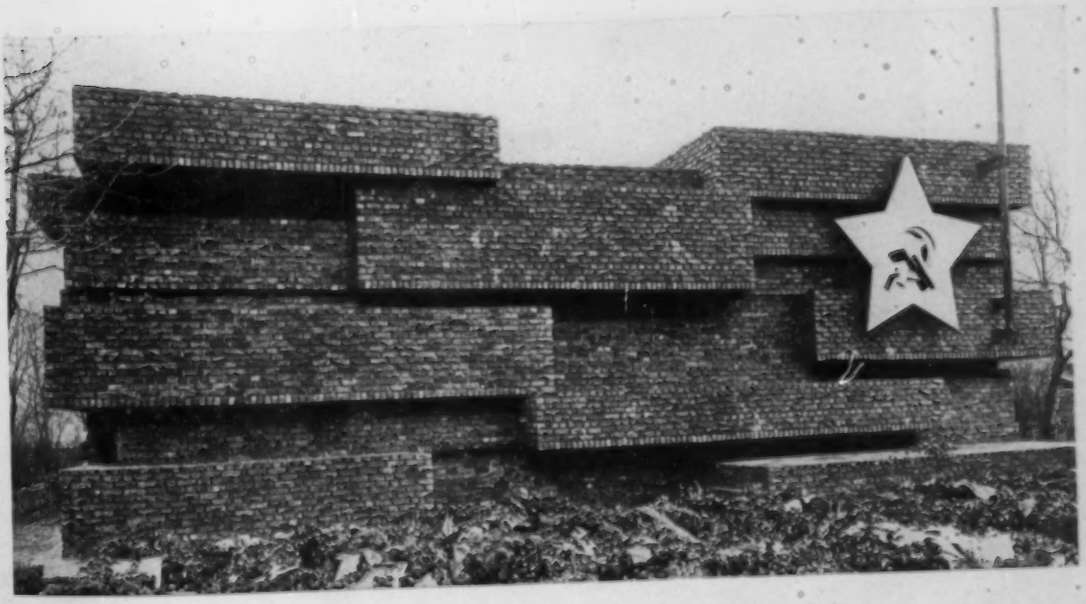

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Mies van der Rohe

1926-1935

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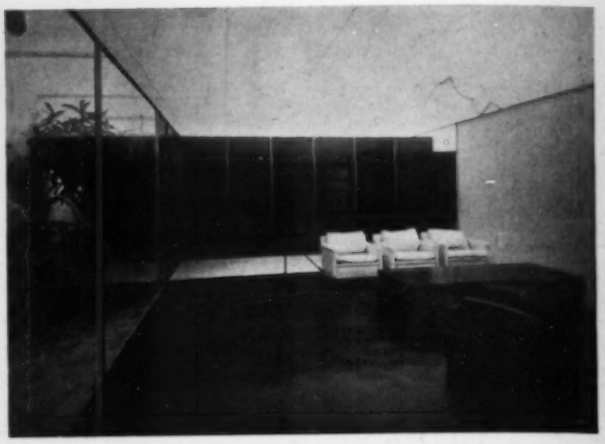

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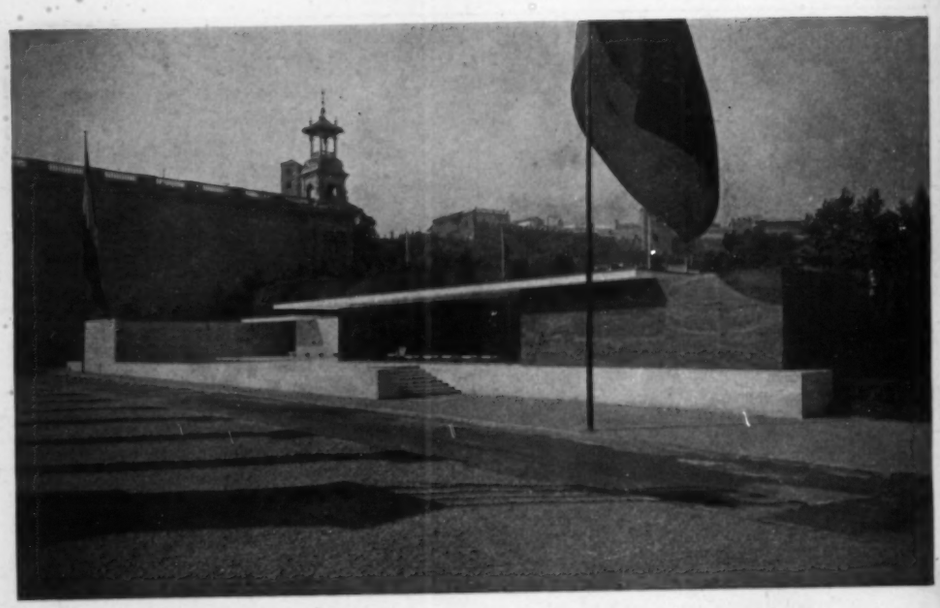

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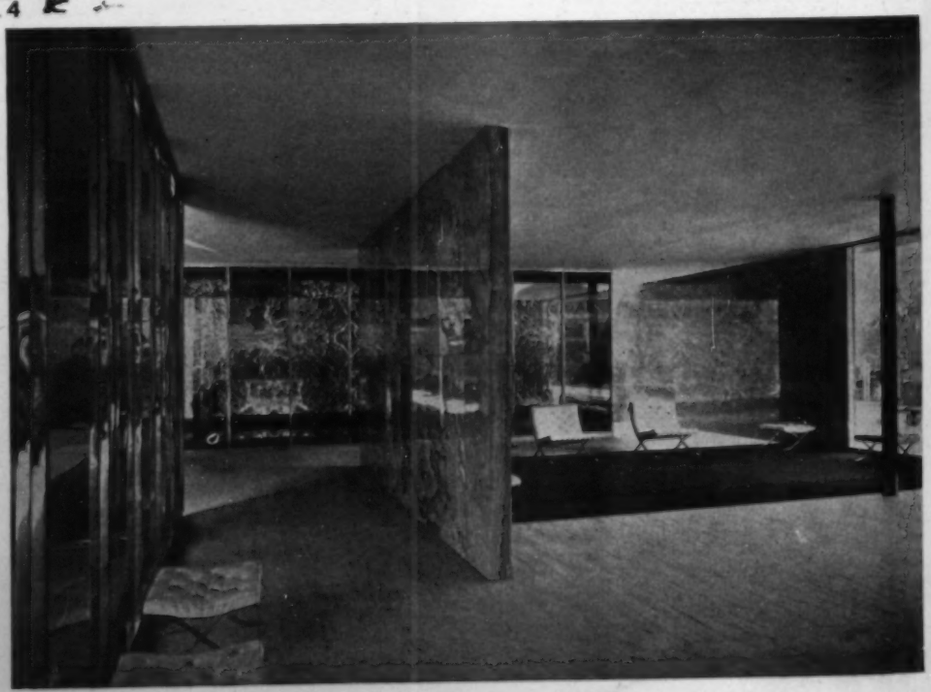

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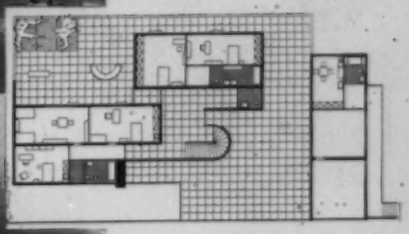

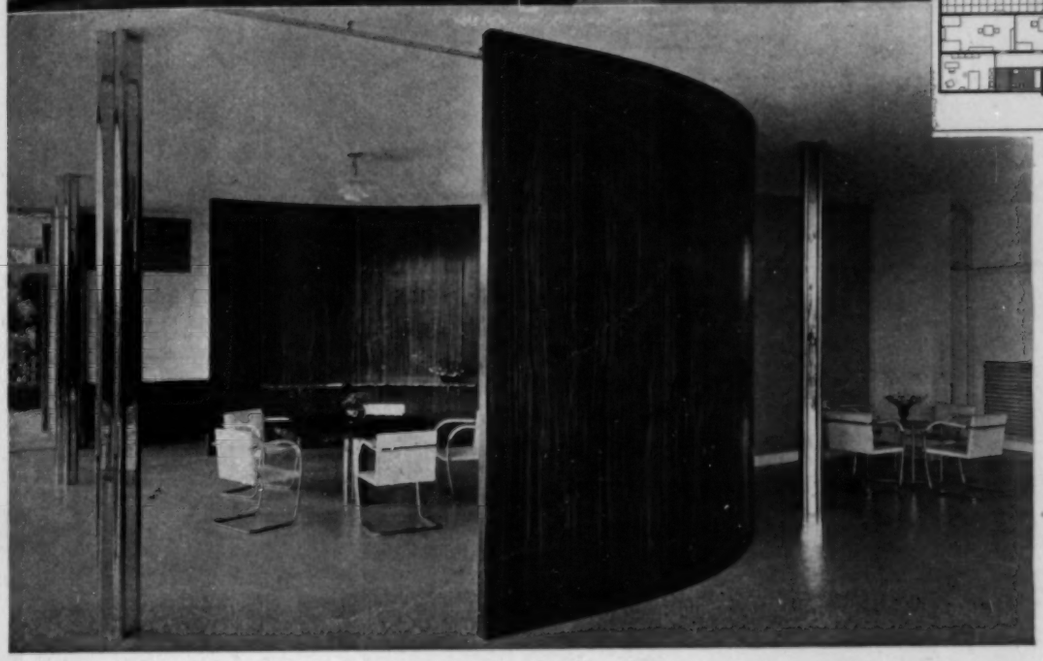

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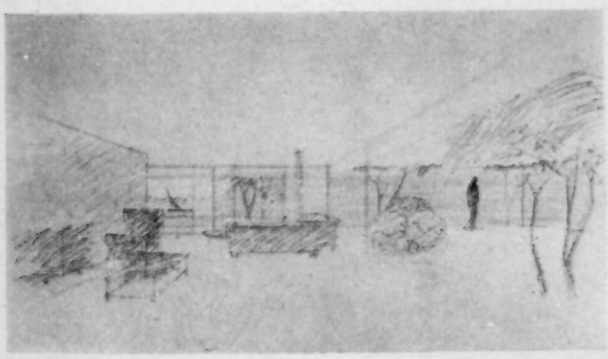

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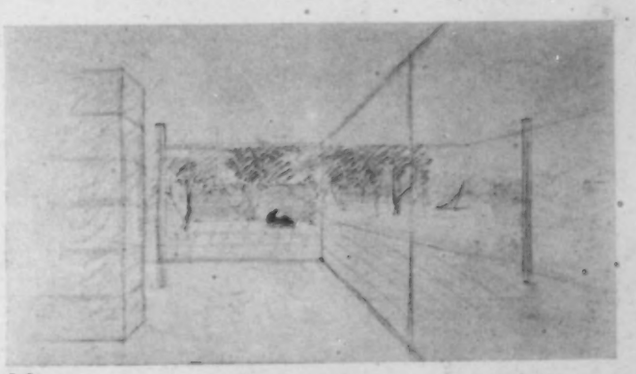

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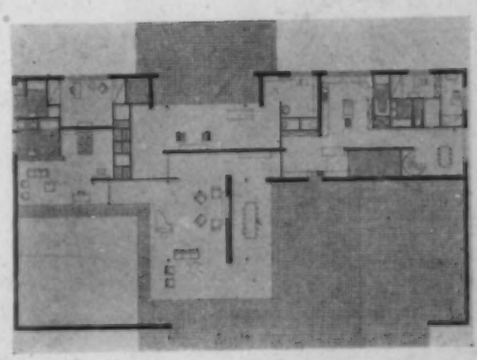
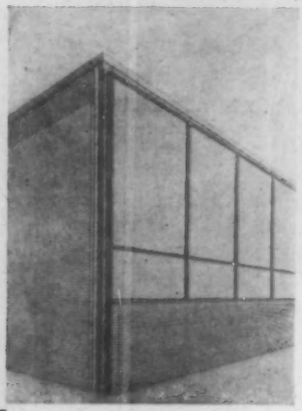
Mies' most active building years were from 1927 to 1933. As Director of the Werkbund Exposition in Stuttgart in 1927 he designed (1) an apartment house and (2) a glass exhibit. (3) and (4) The German Pavilion at the International Exposition at Barcelona in 1929 is a concept of singular purity, with independent walls, flowing space, and rich textural contrasts. (5) (6) and (7) The Tugendhat house in Brno, Czechoslovakia, 1930, contains interiors of unusual perfection of detail. Mies is also famous for the furniture that he has designed for these buildings: (9) and (10) the much-copied steel tube MR chair of 1926, (8) the "Barcelona" chair for the 1929 Pavilion and (11) and (12) the two chairs for the Tugendhat house. From 1931 to 1938 Mies developed a series of "court-house" designs, where the brick walls of the house reach out to enclose garden courts. (13) and (14) In the Hubbe house, Magdeburg, Germany, 1935, glass walls form the only separation between these courts and the living space



Mies van der Rohe

1943–1946



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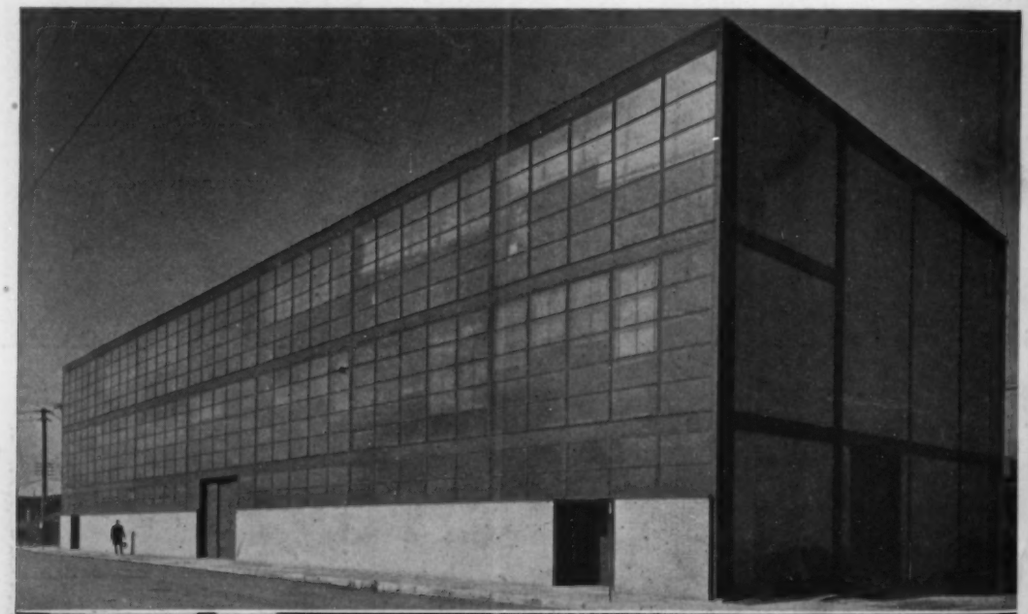
As Director of Architecture at Illinois Institute of Technology in Chicago since 1938, Mies has designed the school's entire new campus. All the studies and executed buildings are remarkable for the careful proportioning of starkly simple forms, dependent for their esthetic effect upon the basic systems of construction used. (1) A corner of the Library and Administration Building, projected in 1944, shows the design effect of the careful joining of steel, glass, and brick. (2) and (3) The Minerals and Metals Research Building, completed in 1943, and (4) and (5) the Alumni Memorial Hall, 1945–46, both with Holabird and Root associated, effectively demonstrate how this design principle is carried out. A regular construction system based on the same cubic bay, 24 by 24 by 12 ft. high, unifies the buildings. Because of necessary fireproofing the steel columns of the Alumni Memorial Hall are encased in concrete, and the concrete faced with mullions. (6) To show that these mullions are not supports they are stopped just short of the ground. Another subtle refinement (7) is the indentation around the mullions, minimizing any unevenness of the brick edge. (8) and (9) Two versions of the same building, a project for the Promontory Apartments in Chicago, 1946, show the different appearance that results from the choice of different structural materials: right, brick and concrete version, left, steel and glass version



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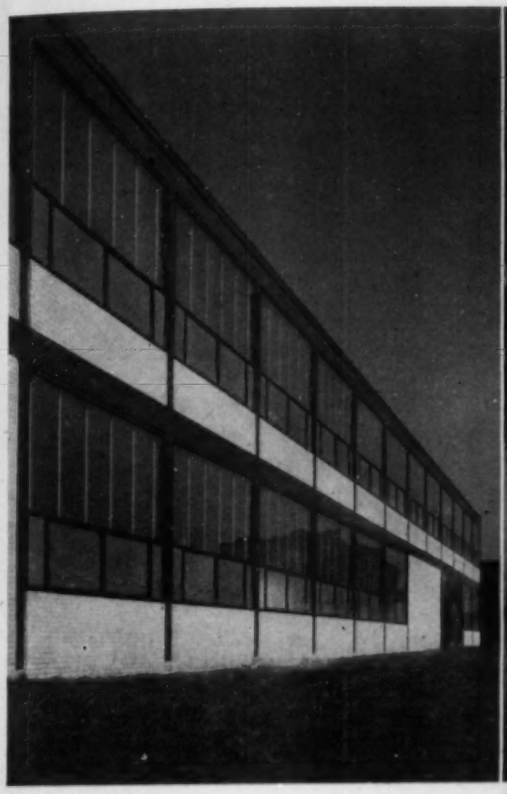
Hedrich-Blessing Photos



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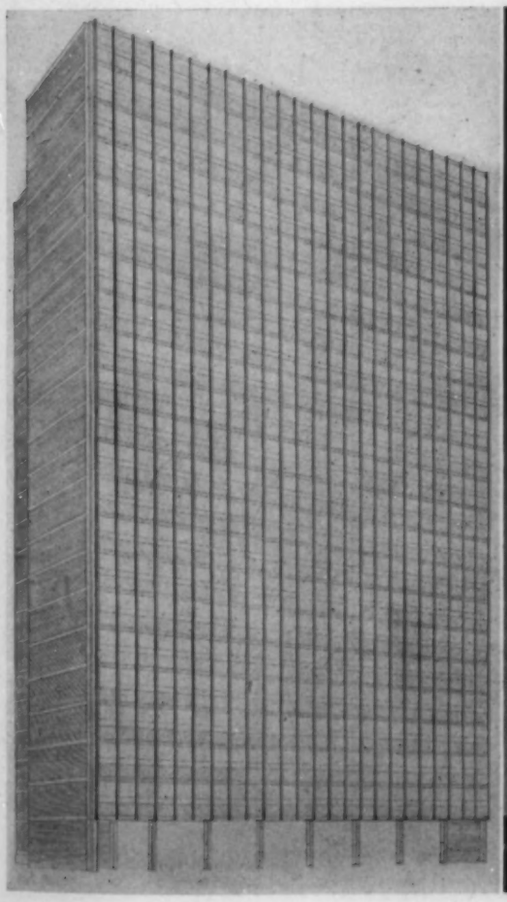
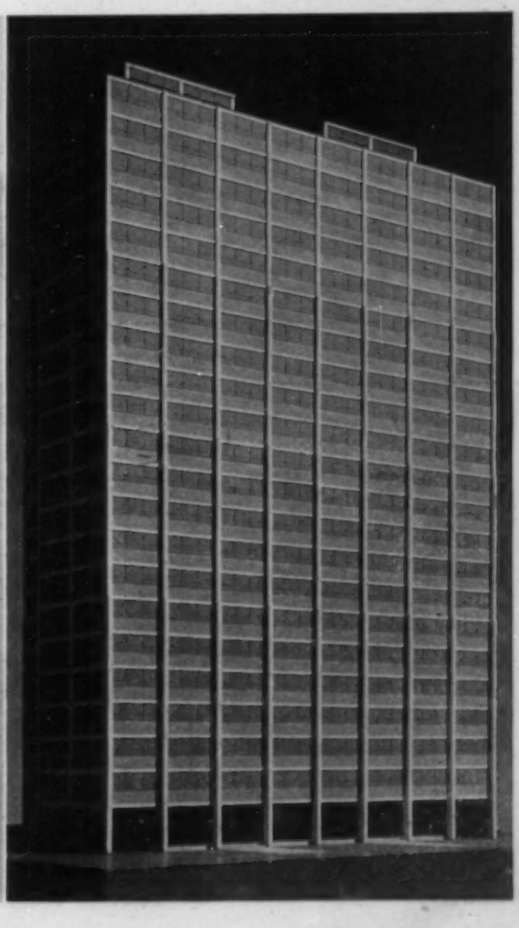
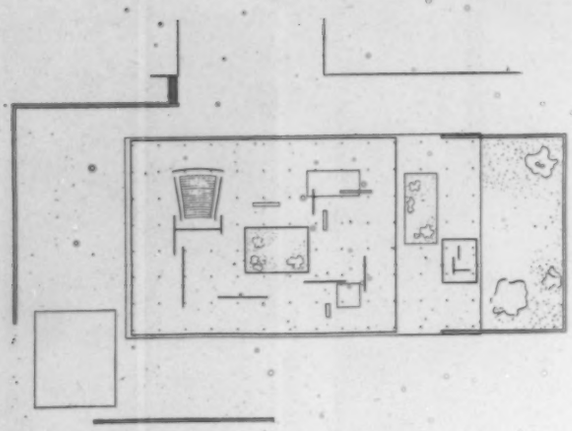




8-9

Mies van der Rohe

(1) and (2) Mies' project for a small museum, conceived in 1942, represents the ultimate in flexible structure, reduced to its simplest terms. There are columns and a roof slab and floor plate with glass exterior walls. Free-standing partitions allow complete interior rearrangement. Painting and sculpture on display become part of the architectural scheme, although never subordinated to it. The extreme simplicity of the setting is an ideal background for works of art. The exterior sketch shows the elongated horizontals of the transparent glass rectangle through which can be seen the curved wall of the auditorium on the right, and in the center, the suspended balcony of the Print Department. From the auditorium of this building Mies has developed his radical scheme (3) for a concert hall, 1946, made of free-standing partitions and an acoustical dropped ceiling within a trussed steel and glass cage. In these latest designs, comparable to the important projects of the Twenties, Mies continues to pioneer in the development of experimental modern architecture



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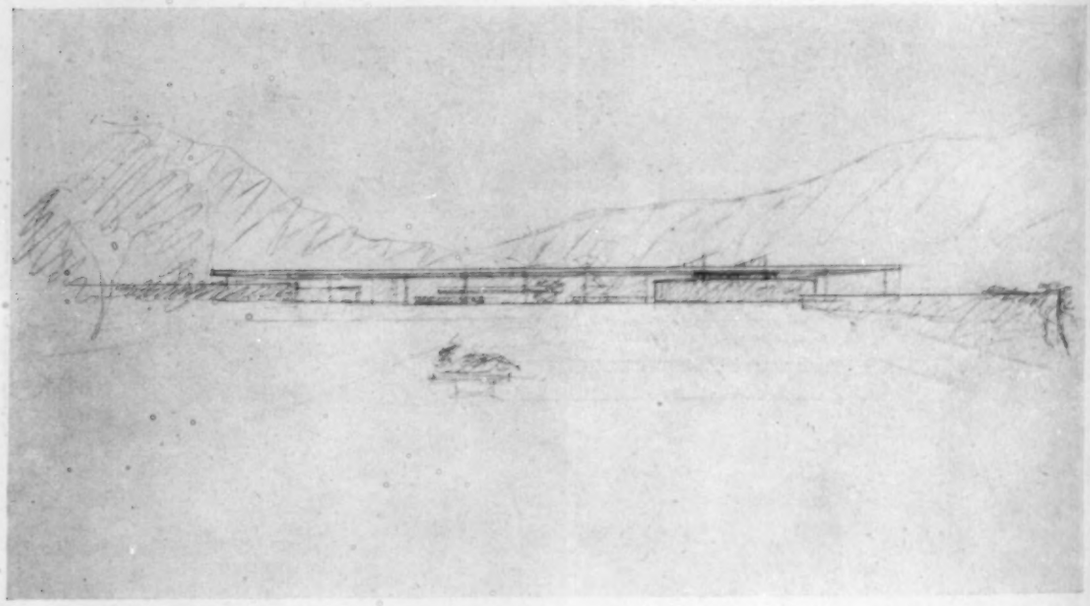

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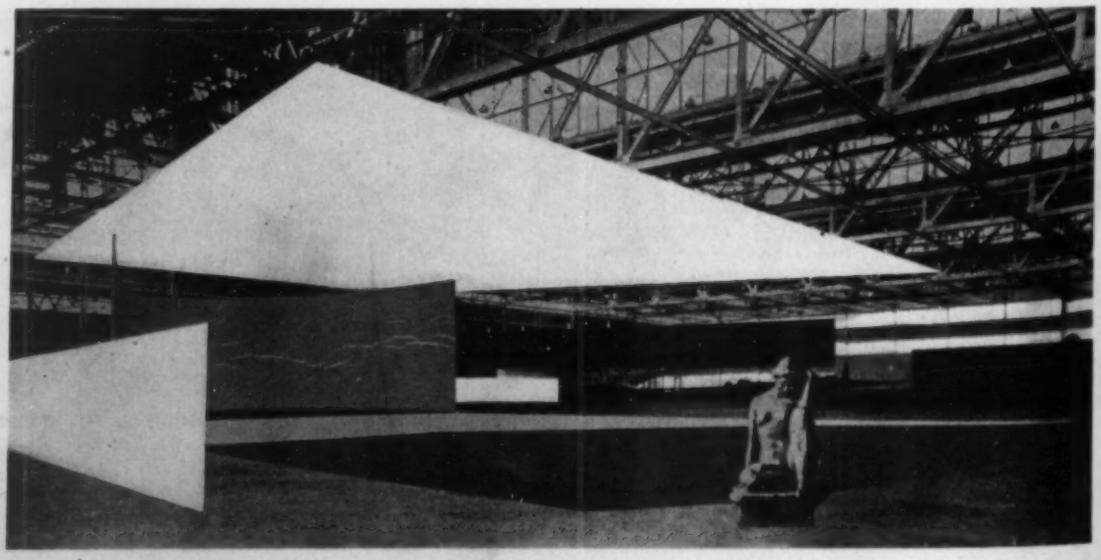

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RELIGIOUS BUILDINGS

ARCHITECTURAL RECORD'S

BUILDING TYPES STUDY NUMBER 129

REALISTIC PLANNING FOR RELIGIOUS INSPIRATION

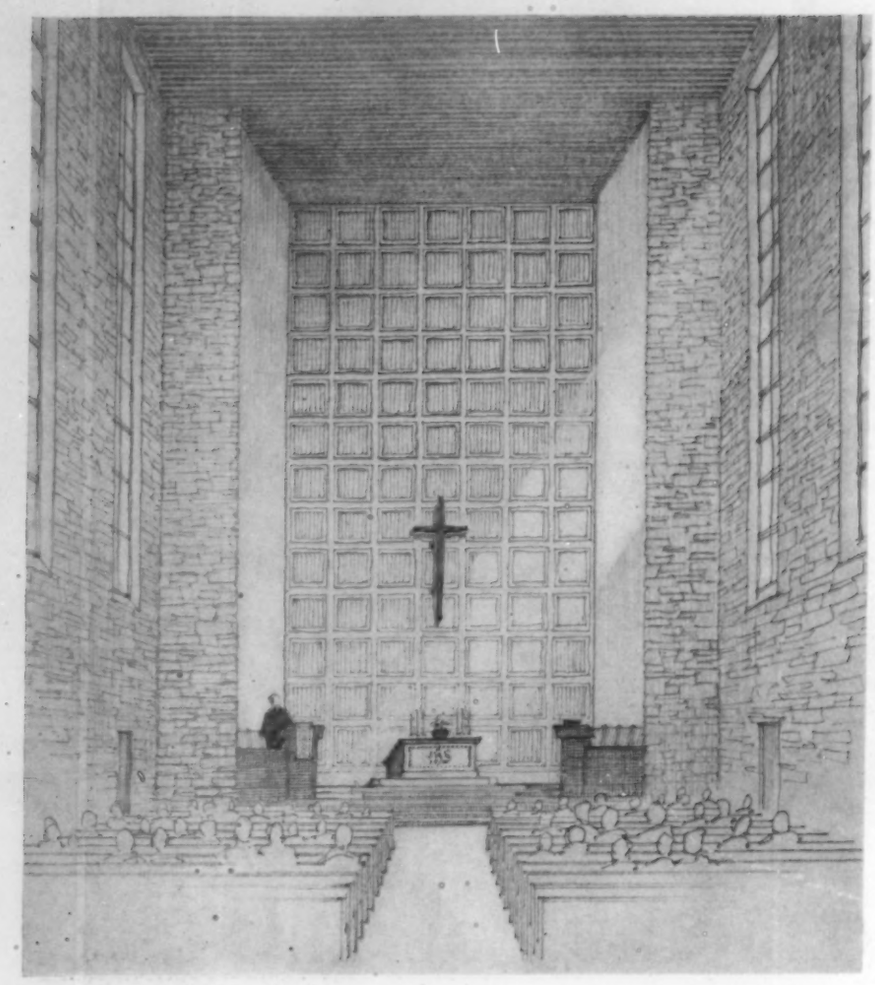
By E. M. Conover, Director, Interdenominational Bureau of Architecture

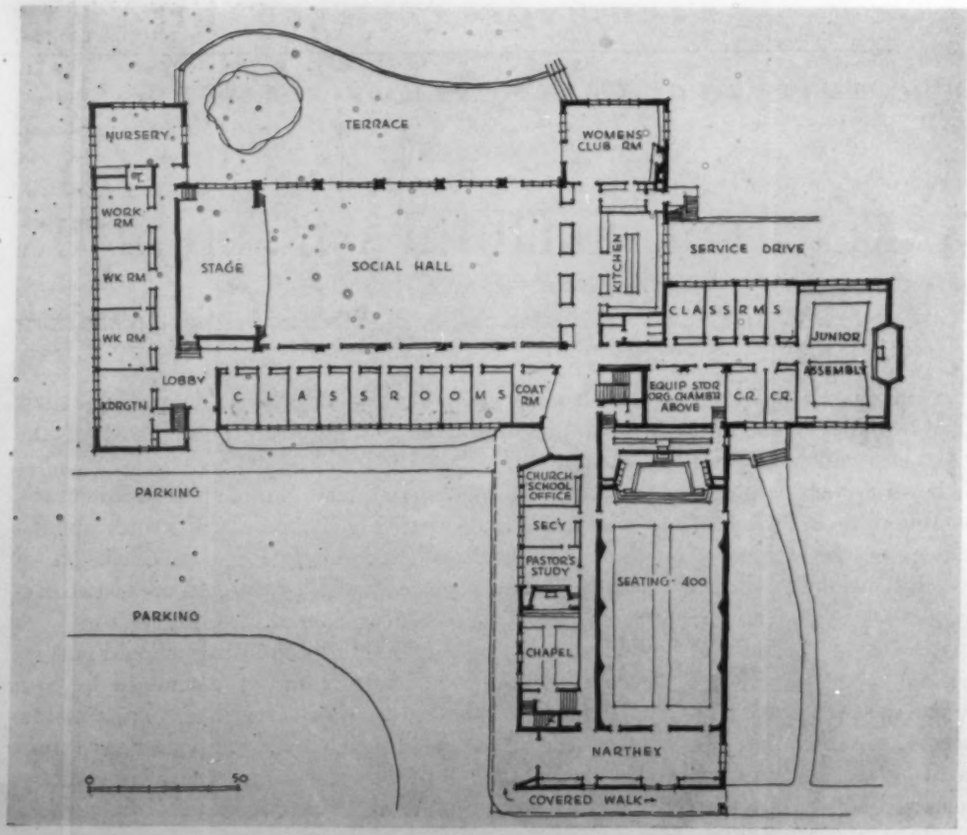
TODAY'S unprecedented figures on church building, under way and in prospect, could be evidence of a deep and widespread new religious impetus, posing not only a challenge for architects, but a certain responsibility. Yet many architects continue to be wary of church assignments and, in many cases, for continuing good reasons. There are still too many clients with inflexible notions of what "looks like a church," to the discouragement of religious expression in the best of contemporary forms and materials.

But worse, there are still too frequent instances of a church committee bringing an architect to conference, not only in huge ignorance of his function and what services may rightfully be expected of him, but with inadequate grasp of the aims and requirements of their own program. Nor is this entirely the fault of the committee.

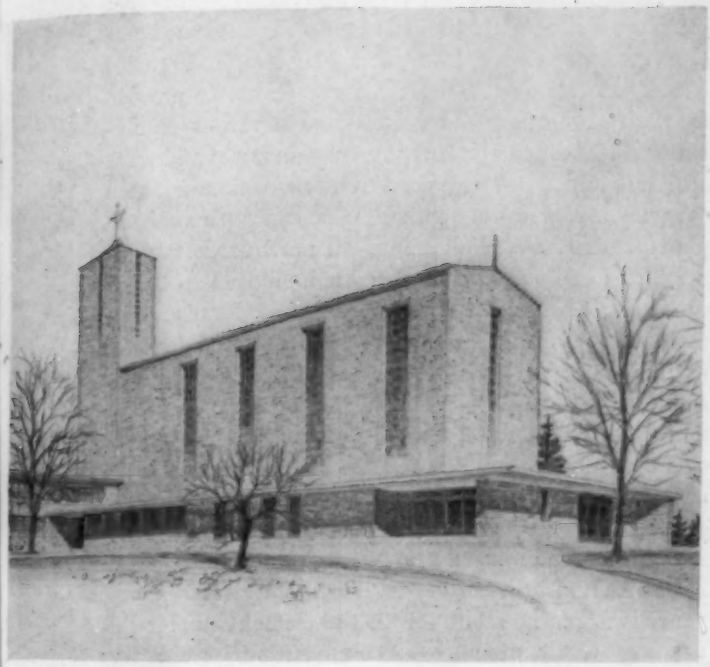
The Interdenominational Bureau of Architecture, maintained cooperatively by the major Protestant denominations, has tried to spread comprehension of church planning as a distinctly *two-fold* operation. Before the architect ever comes into the picture, the church, through its building committee, should make a complete program analysis and statement in its own language, of practices, objectives, and requirements. And the architect, in turn, should study and have thorough knowledge of this document *before* he commits himself to the job in any way. His possible suggestions

1 RELIGIOUS BUILDINGS





Above and left: a proposed church for a suburban site; Malcolm Graeme Duncan, Arch. Sanctuary will be finished in natural stone with deep smoky blue ceiling; recessed "downlights" will be rheostatically controlled. Full-height grille conceals choir and organ, visible to the minister but not to the congregation. Outside, the long canopied walk permits nine cars at once to unload under cover. Narthex has recessed coat racks; chapel is convenient for small weddings, etc. Broad corridor between social hall and kitchen acts as sound buffer and serving space during large dinners. Above stage is a full-sized scene dock; storage for banquet tables below. Storage units and partitions are movable



as to additions, modifications or omissions in the program will be received with much greater understanding after his clients have thoroughly aired and drawn up their views among themselves. He should expect, and insist on receiving a committee-prepared statement of the program, just as he does a survey of the plot.

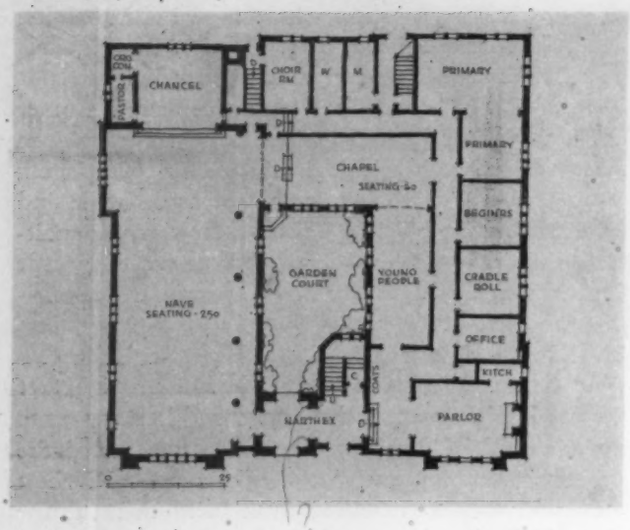
Occasionally still, the Bureau receives such requests as a recent one from a committee for suggestions on orientation, "so we can tell the architect, who will visit us soon, how he shall face the building on the lot." By and large, however, programs submitted to us for review show a progressive understanding on the part of church groups as to what is their province, and what should be left to the competence of the architect. Certainly there is much more realization than formerly that each church is an individual problem, not to be solved in terms of stock plans or admired solutions for other programs. This progress is largely due to better public relations from the profession. The more that architects will undertake to write and demonstrate for non-professional enlightenment, the greater will be the popular grasp of their services and objectives, and the way to successful religious expression in contemporary church architecture will be proportionately smoother.

At the very worst, in a few cases there is an attitude still to be overcome, against even simple comfort and efficiency in churches as somehow inconsistent with the true essence of religion and its practice. These minds must be persuaded that early Christianity flourished not because of the Catacombs, but despite them. In other cases, there may be a disposition to regard provisions for good lighting, hearing, heating and air-conditioning not as concessions to Mammon, but as desirable and even provocative religious adjuncts. However, committee members who favor them in the abstract, when it appears that their adoption in the program will necessitate modification or elimination of sentimentally cherished forms, cling tenaciously to the latter. Enlightenment here may come along the lines of showing that powerful religious expression in past architectures came not as a result of Miracle or Revelation, but through the progressive and innovative use — by men — of the best materials, skills, and methods available to them in their times. This view does not deny that they were inspired by great faith and a sense of supreme purpose, a spirit such as we must have in our own times for like expression. But, also, it does not imply that their forms are sacrosanct, nor that our persisting imitation or tokens of them show us to be similarly inspired. On the contrary, we show in this a poverty, if not a superficiality and dishonesty in our own spirit. I do not believe that the men and inspiration behind Chartres Cathedral, if they were building today, would be nearly so constrained as we tend to be by the example of their own splendid past achievement.

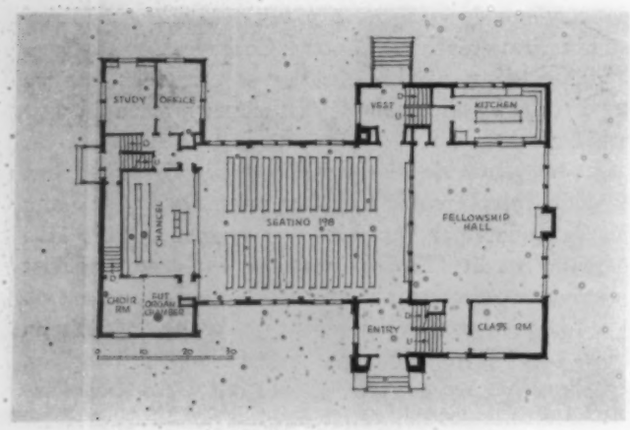
It should not be necessary, in writing for architects, to defend these remarks against inferred advocacy of a purely functional "machine for religion." This is a patent absurdity. Moreover, clients who protest against contemporary treatment that makes their churches look like factories or athletic field houses are not, simply on these grounds, to be charged with archaistic prejudices. I believe we are capable of creating a contemporary religious architecture that transcends industrialism as notable churches of the past transcended secular aspects of feudalism. Our churches need have no more earmarks of the machine and latterday materialism than Chartres has battlements and crossbow embrasures.

In a number of cases still, the process of enlightenment may require that the architect draft an outline for the building committee's guidance, to produce a realistic analysis and statement of the church program. In the Interdenominational Bureau's capacity as consultants for this phase, we recommend the organization of data under a system of such headings as: Worship; Education; Social and Recreational; Administrative and Residential; General Information.

Worship. Typical data under this heading comprise present average attendances at morning, evening and mid-week services, with maximum figures for peak occasions such as Christmas and Easter, giving the architect a basis for judging committee estimates of future seating requirements. Validity of these estimates will depend on the extent and accuracy of study given by the committee to the influence on regular worship attendance of new neighborhood conditions, and of new edu-



Above: chapel partitions and altar in 1st Congregational Church, Highland, Ill., are removable, to accommodate main-area overflow. H. A. Brand, Arch. Below: fellowship hall in Mock's Crest Evangelical Church, Portland, Ore., has glass partitions and loudspeakers, for similar adaptation. D. W. Edmundson, Arch.



cational, social and recreational features contemplated in the program.

Very few committees still show expectations in their programs of future worship facilities in terms of their largest estimated gatherings. But even two services on Christmas and Easter frequently will not take care of the numbers at these peaks, and some arrangement involving other-purpose spaces adjoining the nave will probably be necessary. The plans above show treatment of this problem in ways that have been successful in existing churches.

Further economies in space handling are possible through the provision of a separate chapel appropriately scaled for worship by Junior and Young Peoples' groups, which may be used also for the lesser adult services of evening and mid-week. Such a chapel (see top plan) is often further adaptable for handling peak-occasion surpluses, and can be used as a "worship center" for religious training by groups from adjoining classrooms.

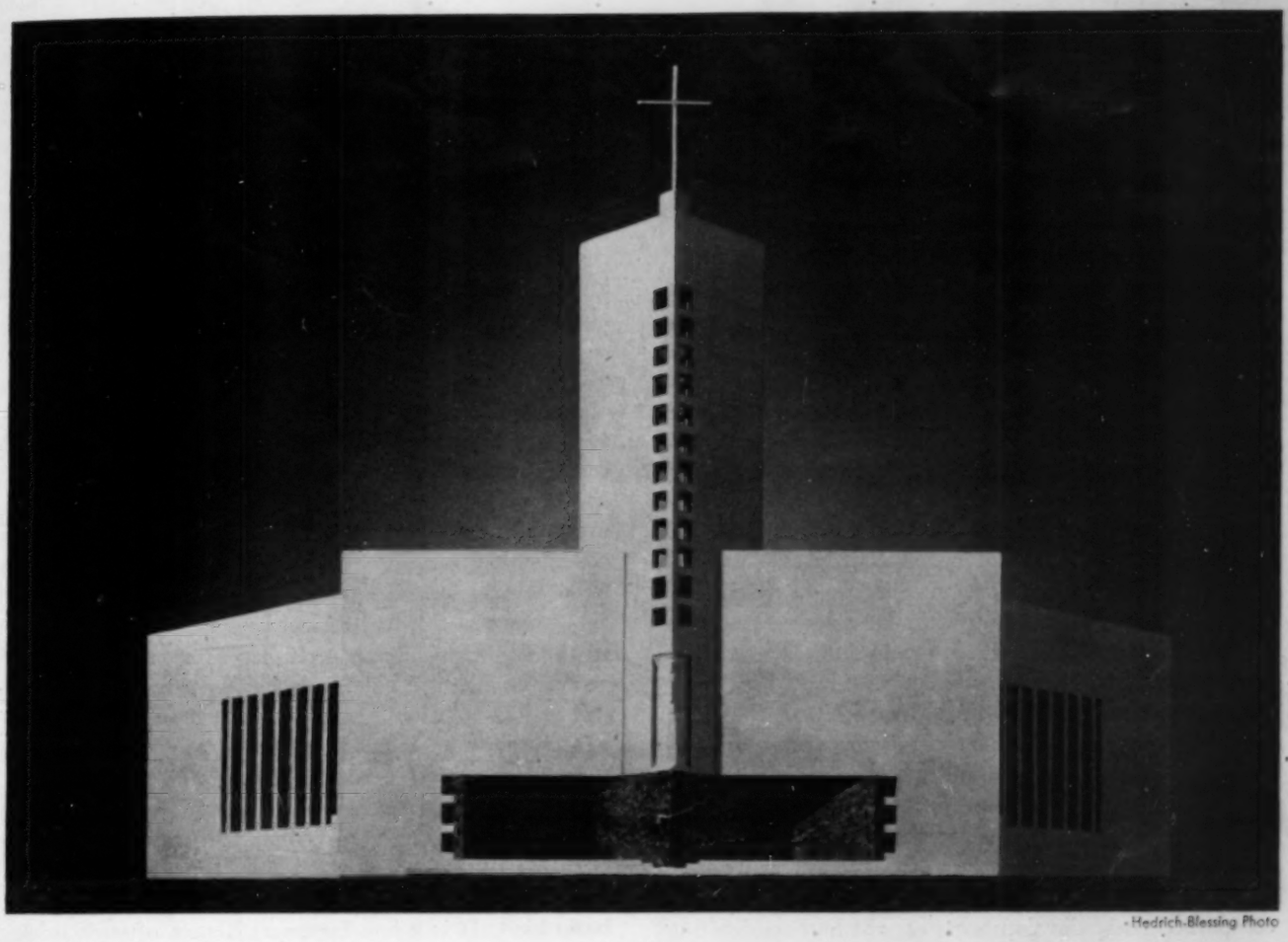
Also to be considered under the heading of Worship are such additional factors as: requirements for baptism; robing rooms; provisions for organ and choir.

Education. The most extensive departmental breakdowns for religious education are generally of this order: Nursery, for children two and a half to four years of age; Beginners (Kindergarten), for four- and five-year-olds; Primary, six to eight; Junior, nine to 11; Intermediate, 12 to 14; High School, 15 to 17; Young People, 18 to 23; Adults, 24 and over. The architect's efforts to provide for these groups, either separately or in various combinations, will depend on estimated attendances and what are determined to be practicable class sizes in each category. Problems of space allowance per person complicate this phase of planning, with standards ranging from 20 to 30 sq. ft. each for small children to 6 to 7 sq. ft. for adults in assembly formation. Instructional methods also are factors — the desirability of desks or round-tables; the use to be made of films and similar aids; facilities for project making and displays, etc. The majority of committees today are anxious to incorporate every possible up-to-date feature and device under the educational heading as a means of strengthening the entire religious program.

Social and Recreational, or Fellowship requirements. Although most desirable, it is seldom that separate provisions can be made for all the elements under this heading that contribute to congregational solidarity: spaces for basketball, volley ball, table tennis; social parlors with fireplace and kitchenette for small gatherings; large dining rooms with adjacent kitchen for total occasions; auditoriums with stage, dressing rooms and movie-projection equipment; meeting rooms for Scouts and other organizations. Successful planning by the architect for convertibility of spaces, from one social or recreational use to another, depends on the accuracy with which the committee appraises future participation in the various activities and the possibilities of staggered scheduling.

General Information includes such data as car-parking requirements; conditions of water service, gas, electricity, sewage disposal; and other general factors of site and neighborhood. Perhaps most important under this heading is information on the state of the budget and financial plan.

Limited budgets call frequently for an increment plan, whereby most-needed units are built first, to be enlarged, or added to in the future with increase of membership and congregational affluence (see page 112). Also, it is often on the basis of budgetary limits that the best arguments can be advanced for the use of contemporary means. Faithful and durable accomplishments of traditional appearances are expensive, and the conditions of long service, hard usage and mellowing with time are usually not to be met in surface approximations. Every instance of persuasion that more of the desired objectives in a program can be attained through discard of superfluous trappings in favor of the economies inherent in modern materials and methods, and the power and grace potential in contemporary design, brings us closer to a church architecture showing an inspiration at least equivalent to that in great periods of the past.



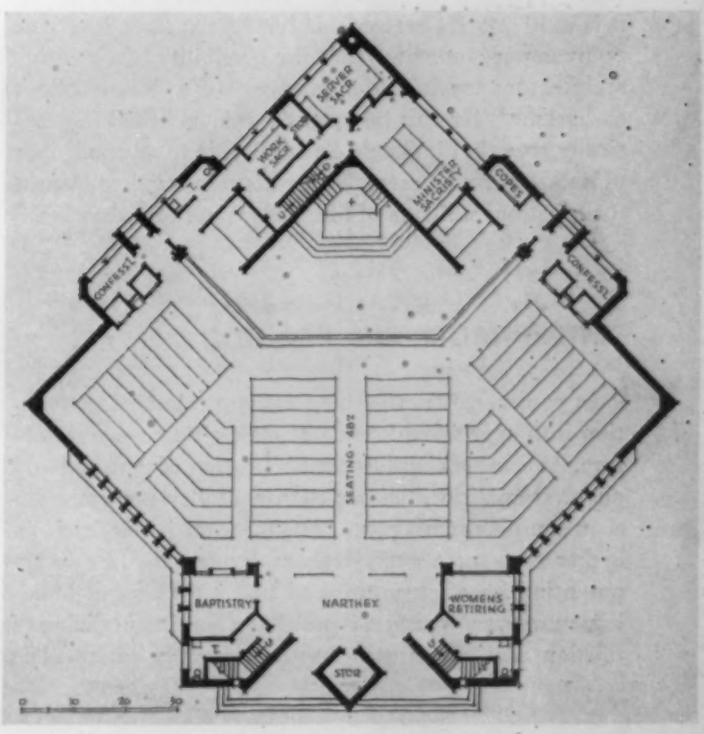
Hedrich-Blessing Photo

TOWARD A NEW ARCHITECTURE OF WORSHIP

By Barry Byrne

THE challenge of any major crisis in national or personal affairs quickly reveals how unsubstantial is our crust-like surface of materialism. The majority of our people still believe in God, in the existence of the soul and its immortality. Fashion has eroded that belief, and an often shoddy intellectualism has obscured it, but it still exists at the core of our national life.

In an article on the design of churches this is essential to recall, for it is the belief in God, and the projection of that faith into forms of worship, which cause churches to be built, whether they be Jewish, Catholic or Protestant. This belief, therefore, is primary to the development of a creative religious architecture, and the center from which esthetic growth must come if churches are to achieve an architectural distinction bespeaking unity of structure, purpose and form. Architecture based on



Chapel of St. Thomas More will be part of Catholic Student Center at University of Iowa. It will be steel frame, stone-faced, with large balcony. Barry Byrne, architect

literally rendered structure alone results in chill and unsuitable aridity; such a literalism can only create skeletons, or frameworks of architecture. The religious purpose of a church must be sensitively comprehended and expressed, to invest the skeletal, functional elements with something like a living quality.

I do not think that this contravenes the dictum of Louis H. Sullivan, predicating architectural form on function, for his building designs are ample evidence that he regarded function as including structure *and* purpose. The latter, he must have held as possessing both practical and symbolically expressive aspects. In separately emphasizing these two components of function, I hope to accentuate the difference between the arid literalism of contemporary doctrinaire functionalism and the greater thing, an esthetically resolved, living, contemporary architecture. For doctrinaire functionalism is an off-shoot of that phase of cultural disintegration reflected in many recent art movements of European origin. As such, it has no particular relevance to the problem of a creative architecture in America, at least as relates to its expressive character.

On the other hand, it must be admitted that the analytical character of the best of European modernism has definite value. Developments of a spatial nature, as shown in plans; the simplification of form; and the use of contrasting elements and masses, are all to the profit of architecture. However, I believe the rather self-conscious and too uniform stylistic manner that has accompanied these developments cannot be considered a profound or lasting achievement. There is a good deal of evidence that what is merely a manner of design has been elevated to the plane of a universally applicable architectural prescription. The acceptance of this idea by architects at large would be fatal to progress.

European modern art and architecture derive their force from a reaction against academic forms of art and architecture. This makes them rootless, in the last analysis, for it limits their field to the realm of art, whereas it is in life itself that such activity must have its roots. Sullivan once indicated that the possibility of a creative architecture lay in the application of a "rule without exceptions." By this he meant a rule so broad and basically true that it should be applicable to all conditions of building, by all men. While this rule requires respect for function, which is of life, it does not end there.

SENTIMENTALITY AND REACTION

In contrast, it is the imaginative projection of function into expressive form that makes a living architecture. And in seeking this transmutation of material and physical qualities, neither sentimentality nor romanticism can play much part. Instead, what is required is a higher realism, a super-realism, expressing the design potentialities of structure and use. In a church building, moreover, we must beware of a sentimentalizing of religion that constitutes its grievous impairment. The reflection of it in a church woefully lessens its quality and even brings into question its right to be considered a piece of valid architecture. Sentimentality, and the false standards it has imposed on public taste, have been over-reflected in American church buildings, but growing understanding of the difference between genuine religious structures and sentimentally impure types is most encouraging. The desire for growth of a creative church architecture is apparent, almost more so than the present ability of American architects to satisfy it.

In opposition to sentimental or romantic religiosity, modern Europe furnishes numerous examples of churches which are a reaction against it. Our tendency to imitate European models particularly necessitates a critical estimate of these buildings which, generally speaking, divide into two types. One of these is no more than a simplification of medieval types, allied to considerable esthetic knowledge of primary historic architectural forms. The work of Domenicus Bohm is an instance of this at its best. I regard its contribution to the future of church architecture as negligible; the central problem of church design for a modern society will find no solution in such work. It begs the question.

The other and more significant type represents a return to function as a basis, often in a doctrinaire manner, in the mode of stylization promoted by the Bauhaus in Germany and the work of le Corbusier in France. Occasionally these last succeed in being true buildings and to that extent, at least, they have virtues of a basic kind. It is a less fortunate aspect of such work, however, that there rarely appears any fundamentally new resolution of the elements of plan, and the buildings in question do not often succeed really in becoming *churches*. Nor, as a well-known ecclesiastic has stated, is this achieved by adding a cross, much as if it were an afterthought, as a sign to advertise the purpose of the building. Churchliness, in contrast, must be integral in the very fabric of the architecture. Its note, if one may generalize, should be that of gracious austerity. Barrenness, or meagerness, does not achieve this.

A reasonable test of any such design is to temporarily eliminate obvious and identifiable symbols like the cross, and then to judge whether the design is religious in character. But the test has no value in cases where comprehension of the religious in architecture is strongly conditioned by recollections of medieval forms. And this, unfortunately, too often clouds the basis of critical judgment of efforts at contemporary design for churches. Such an architecture must be judged on its own merits as a religious product of the present, not of the past.

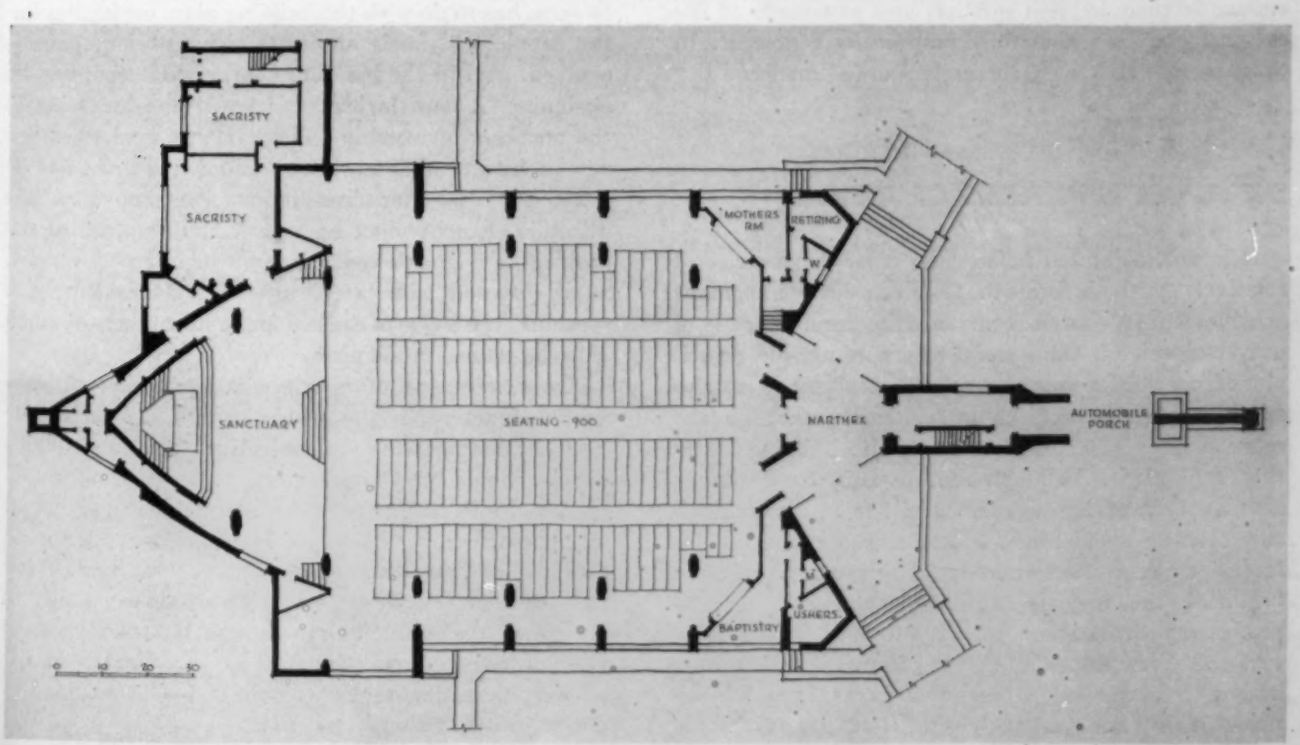
The failure of most of European modernism to achieve a satisfying churchly character is often mistakenly assumed to be inescapable and inherent in the grammar of form that has mushroomed up about it. I have found this idea to be widespread and to exist particularly among churchmen whose interest in contemporary art has led them to visit modern European churches. I may add that I have yet to find one of these personages who did not fully appreciate the desirability.

even the necessity, of a contemporary style in church architecture. They were disappointed only in not finding one that approached adequacy. That their view in many instances was affected by preconceived ideas must be granted, but I must in all honesty agree that the design of many of these churches demonstrates an unbalanced preoccupation with the qualities of industrial buildings. In the between-wars period, industrialism itself attained the proportions of a fetish in Western Europe and the Soviet, and this has had its reflection in architectural efforts. The relative honesty of the structure of a modern factory building is an admirable thing, and what it reveals in this respect is basic to one aspect of architecture. A church, however, is not a factory nor can the design of it be approached as if what applied in one case fitted with the other. A like honesty, religiously expressed, would be right in a church, and it is a regrettable fact that it so rarely exists there. A taste conditioned by a lack of honesty in architecture, we can be certain, will find the presence of honesty a rather trying circumstance in any case. Such a conditioning of taste probably, too, explains the attitude of some critics.

VALID AND SUPERFICIAL MODERNISM

The general skepticism about the possibility of successful contemporary design in churches is partly due to a failure to discriminate between the more valid modern design and its superficial imitations. As this superficial

St. Francis Xavier Church, Kansas City, Mo., will be steel frame with exterior stone facing. Barry Byrne, Architect; Joseph B. Shaughnessy, Associate. Models for this church and Chapel of St. Thomas More were by B. J. Parks and Z. H. McClanahan



modernism exists in America in great quantity, it unfortunately influences people's view of the entire trend in style. One would be over-dignifying such design by ascribing to it the qualities of a legitimate architectural grammar. As a matter of fact much that is current in form, even in relatively good work, is only in the nature of clichés. Bad modernism, moreover, is made up almost exclusively of clichés, used as short-cuts in the design process to achieve a specious effectiveness and to cover a lack of knowledge and imagination.

MODERNITY IN TRADITION

As true church architecture must be of enduring character, linking the present to the past, as well as to the future, the value of this superficial modernism for church use is rightly brought into question. Bad architecture is only bad architecture. The label of modernism does not change that badness, and skepticism as to its enduring value is entirely warranted. While we can only design in our time and must accept the limitations that this imposes, a true church, and in fact all true architecture, is actually timeless. It is not, therefore, a matter of fashion. It must endure in common respect through generations, and bad modernism does not endure in respect for a decade. At its esthetic best it is only effective, and objective effectiveness is itself an architectural vice.

There is no formula, no quick method, for achieving an architecture expressive of religious purpose. It is too profound in its implications to permit this, for it is related to long-range social aspects of life that mature slowly. Successful relationships, in this respect, of past architectures that were religious in type have made them endure in their implicit quality, and as records of the cultural periods which they graphically represent. In these periods they were themselves once "modern."

THE FUTURE IS IN TERMS OF THE PAST

It is not, as stated before, the current congeries of relatively synthetic forms that is the basically important achievement in contemporary architecture. What is of universal value is the general return to age-old principles of exterior form as the esthetic resultant of interior space, achieving architectural integrity through the relationship and expressiveness of the building fabric that encloses it. Although the Romans, as we know, separated themselves fundamentally from the architecture that preceded them, by their preoccupation with interior space as a determining factor in their baths and basilicas, the logical esthetic development of this profoundly revolutionary idea had to await the architecture that grew up around Byzantium, where structure and purpose were fused into new forms, in which elements of interior space determined exterior mass and details. It was, furthermore, the exemplification of this idea that produced all great church architectures, down to the decline of the medieval culture. The innovation appeared in Rome, the consummation in Byzantium. And in returning to this basic and far-reaching architectural conception, we are taking our rightful place as heirs of Mediterranean culture.

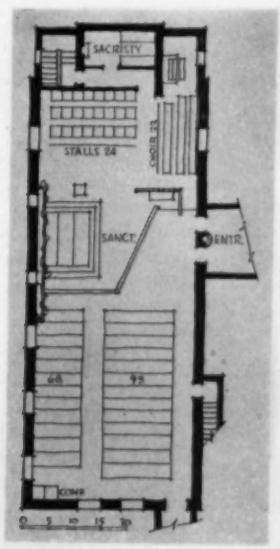
Contemporary architecture of the significant kind has added to this concept, or rather, it might be more exact to say, has developed it. The revolutionary element in Frank Lloyd Wright's plans lies in his new use of this old idea, and, as evidence amply indicates, his application possesses a natural dynamism that has influenced, if not determined, a world-wide architectural trend. Beyond this achievement, he makes a new and significant departure, for he demonstrates that interior space in architecture is a subdivision of general exterior space. His plans unify one with the other. He, therefore, in a continuity of tradition, has enriched and added to it in a fundamental way that is important in what it portends for the future of architecture. In this, of course, I am particularly thinking of potentialities rather than of accomplished form. His architectural forms are his own; this innovation is his bequest to the future.

PLAN: THE BASIS FOR INNOVATION

Granting the special facts of worship and its requirements of seclusion and detachment from the material world, I would say that the future of a vital church architecture largely depended on the application of this concept of continuous exterior and interior space, combined with fresh resolutions of interior space to clarify and intensify given forms of worship. All of this, it will be seen, has to do with the building plan, for in that lies the intellectual basis around which interior space is evolved. And in the building plan, architecture has its beginning. A new, logical plan having its inception in the purposes of worship will inevitably lead toward a new architectural form, but the approach must not be vitiated by desire for trivial innovation or novelty. The dynamic element must be found in the nature of the problem of a church itself, and not be imposed upon it. Super-imposed, simulated, muscular dynamism of a specious type is one of the less fortunate aspects of much of architectural modernism.

The attainment of a symbolic expression of worshipful function in the whole church, by legitimate esthetic means, is the real objective. And an enduring quality should be of vital concern to us, for the worship of God, to which churches are dedicated, is a profound and not a transitory matter. There are some who will disagree with my ideas of what is important, but I think they can scarcely be persons who would be happy in designing a church. This article is not addressed to them but to persons who, like myself, believe in the primary necessity of the worship of God, and hope to design in a way that is suitable.

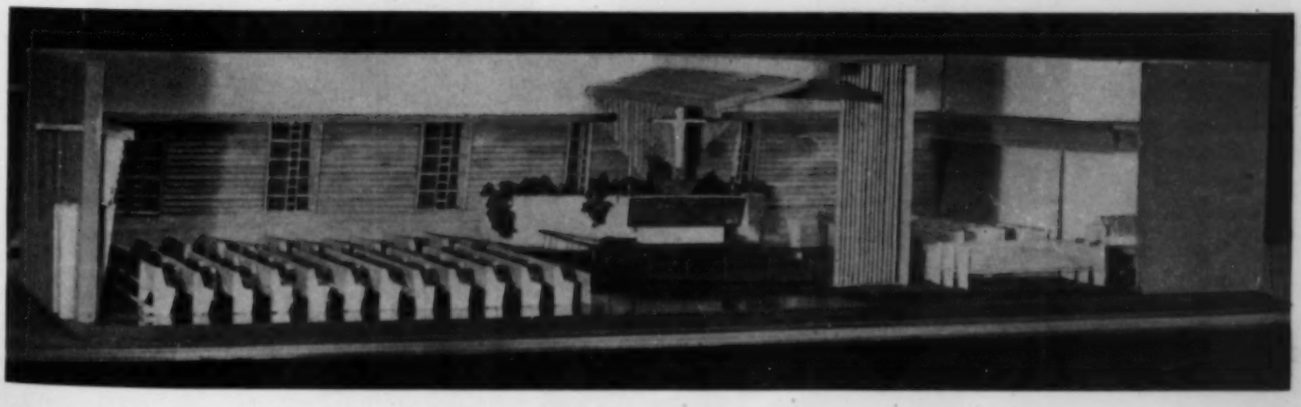
P. E. Guerrero Photos



CHILDREN'S CHAPEL, BROOKLYN

Joseph Salerno, Architect

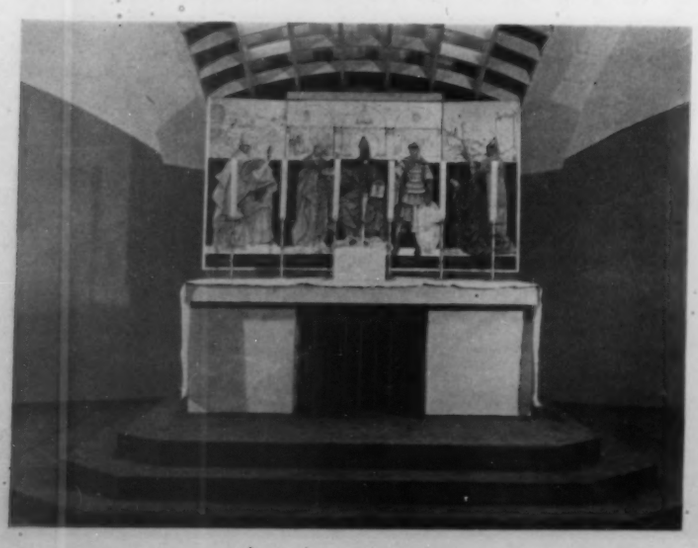
SCANT width between existing walls encouraged the use of a centrally-located altar in this new chapel for the Angel Guardian Home. This arrangement, affording better view of the Mass and bringing the entire gathering into closer relationship with the essential elements of worship, is increasingly favored for general adoption. In this case it also makes the altar immediately visible from the main entrance. Sanctuary carpeting of deep green and a dark blue rubber-tile floor will further emphasize the altar's importance. The symbolic living vine behind it will be bedded in white marble. Side walls are slightly canted inward, with cove lighting on top, to give an effect of spread to the ceiling.

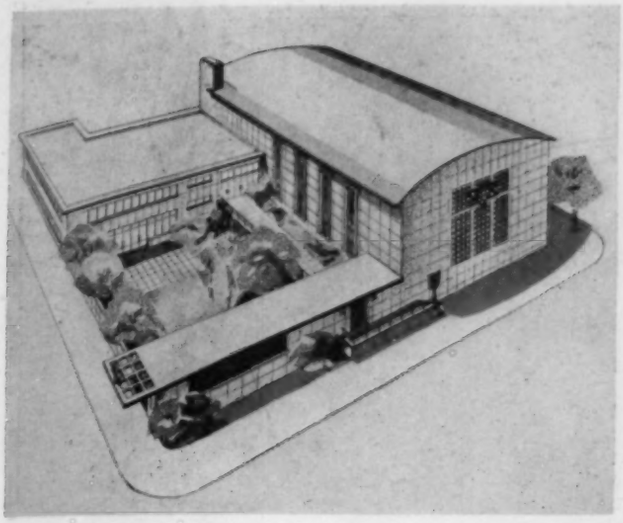


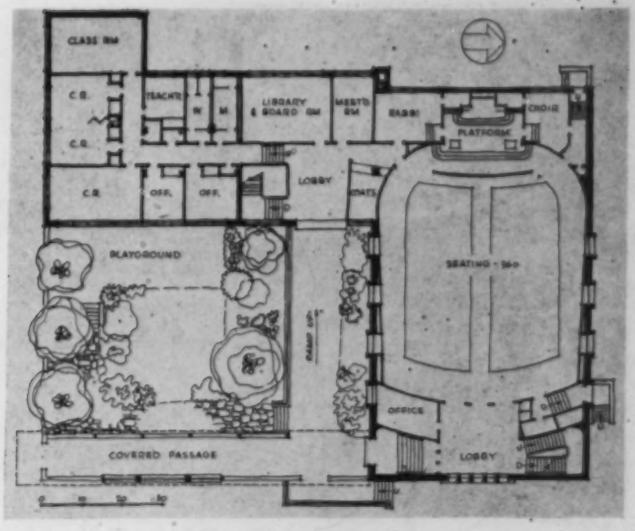
CRYPT. CHAPEL, LATROBE, PA.

Emil Frei, Designer

LIMESTONE slab altars in the crypt of St. Vincent's Archabbey follow the general key of extreme simplicity. Eventually each station will have a triptych similar to that over the main altar by Jan Heryk de Rosen. These will be the principal color notes, set off by the black and white tonality of Emil Frei's windows, typified at right. Shades of the glass range from bluish to silver grey; details are a black vitrifiable pigment.







"AN AMERICAN SYNAGOGUE FOR TODAY AND TOMORROW"

With this statement of theme, the Union of American Hebrew Congregations is currently holding a series of conferences "as first steps in the direction of well-planned and distinctively Jewish buildings, avoiding the false traditions of the past." The opinions given below were expressed at the initial session, held recently in New York City. Professor Franz Landsberger of Hebrew Union College is Visiting Consultant in Architecture to the U.A.H.C. Harry M. Prince, A.I.A., is the organization's regular Technical Consultant; his proposal for a medium-sized synagogue (above) is one of several shown at the conference. The notes by Percival and Paul Goodman appeared originally in "Commentary", published by the American Jewish Committee

Franz Landsberger: "It was the synagogue which first suggested the concept of a congregational house of worship, adopted by Judaism's daughter religions, Christianity and Mohammedanism. But as Christians and Mohammedans continually increased in the size and number of their communities, and as the Jews were scattered further among them, synagogues were built according to the various architectural patterns of the non-Jewish world. The synagogue in Kai-feng-fu in China closely resembles the pagodas of that land. Though original in conception, the synagogue never developed a form or style of its own. In the middle ages, Moorish and Gothic synagogue styles were expressive of the spirit of the age, with which the Jews were also impregnated. But with the passing of time we too have changed and cannot return artificially to the past."

Harry M. Prince: "Reform Liberal Judaism in the United States is a vital, progressive movement. It is out of place equally in a Byzantine or turreted mosque, in a Romanesque adaptation, or in a copy, good or bad, of a Grecian or Roman temple. I was recently given a design to criticize of a proposed synagogue for the West that lacked only a cross on top to be a Catholic mission church. The design itself was excellent but it no more expressed Jewish functionalism than a Gothic Cathedral."

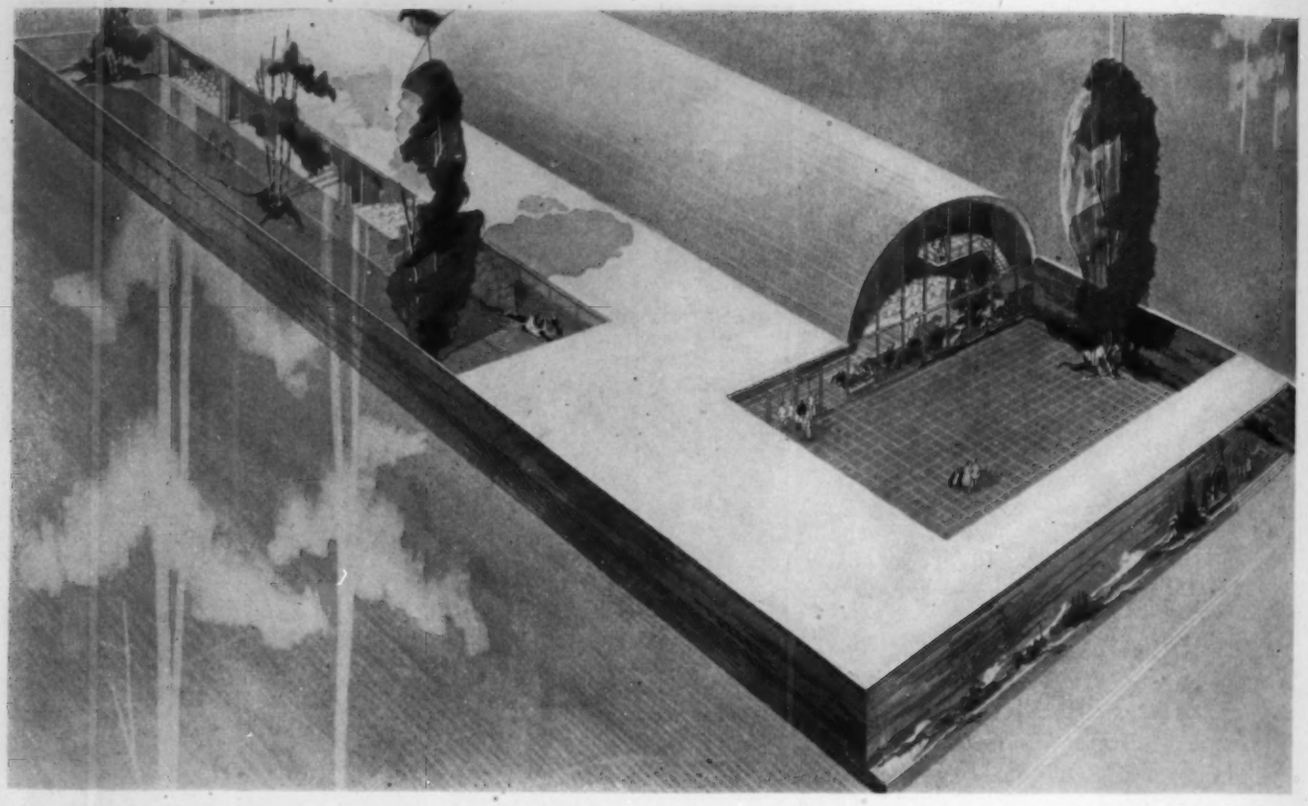
Percival and Paul Goodman: "There is a tradition *in* the synagogue: the tradition of the service, of the sacred objects and furniture, and — to a degree — of the iconography — its symbols and decorations. There is also a tradition of the congregational functions of the building. A tradition of synagogue building can be drawn from the tradition that exists, *the service and the congregation;* it cannot be imported where it does not exist, and should not exist, in the construction and style.

"The fundamental act of the service, the reading of the Law, comprises, orthodoxly, taking the Scrolls from the Ark, carrying them in procession to the reading desk, calling up the men of the congregation for the reading, raising high the Scrolls for all to see, dressing them again, and returning them in procession to the Ark. This complicated choreography contains a wealth of material for functional design.

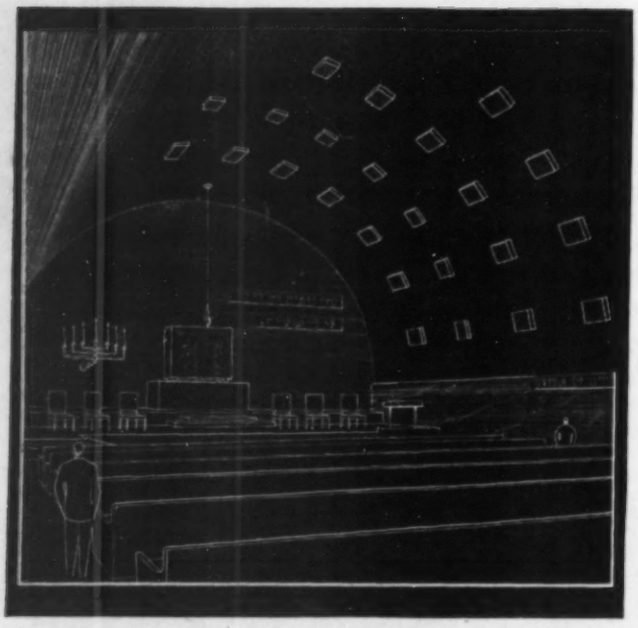
"The outdoor booth for Succoth provides another example of the relation of service and plan. This calls for a garden plot, which during warm weather can serve also for collations, and — perhaps most important — as a milling-round space for such of the congregation as go outside during long services.

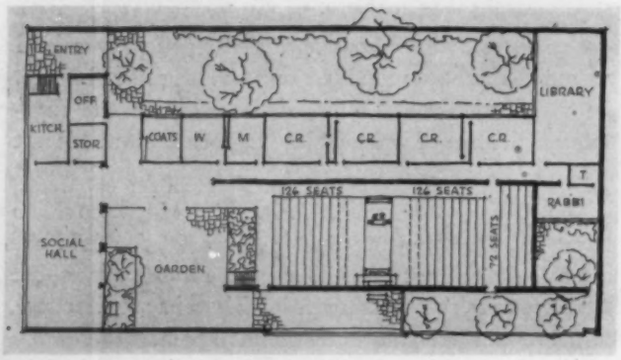
"The service throughout is a reading of prayers and everyone has a book; the light must be bright and white. The visible congregation is of the essence; the mysterious brilliance of stained glass is glorious, but it is not ours.

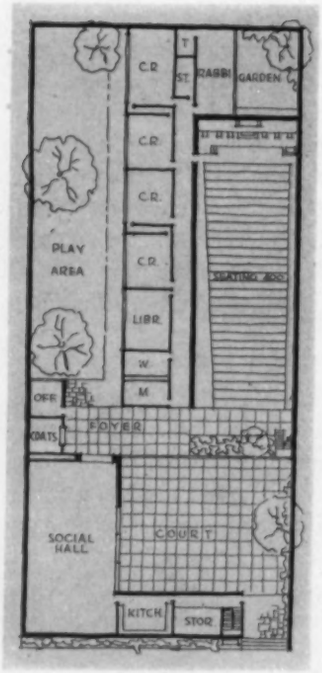
"Decoratively, the role of the architect is to provide a setting for the sculpture and furniture of the Ark, the desk and light, the Scrolls. Decoration in the synagogue calls for a much closer integration between architecture, sculpture and painting than we have seen."

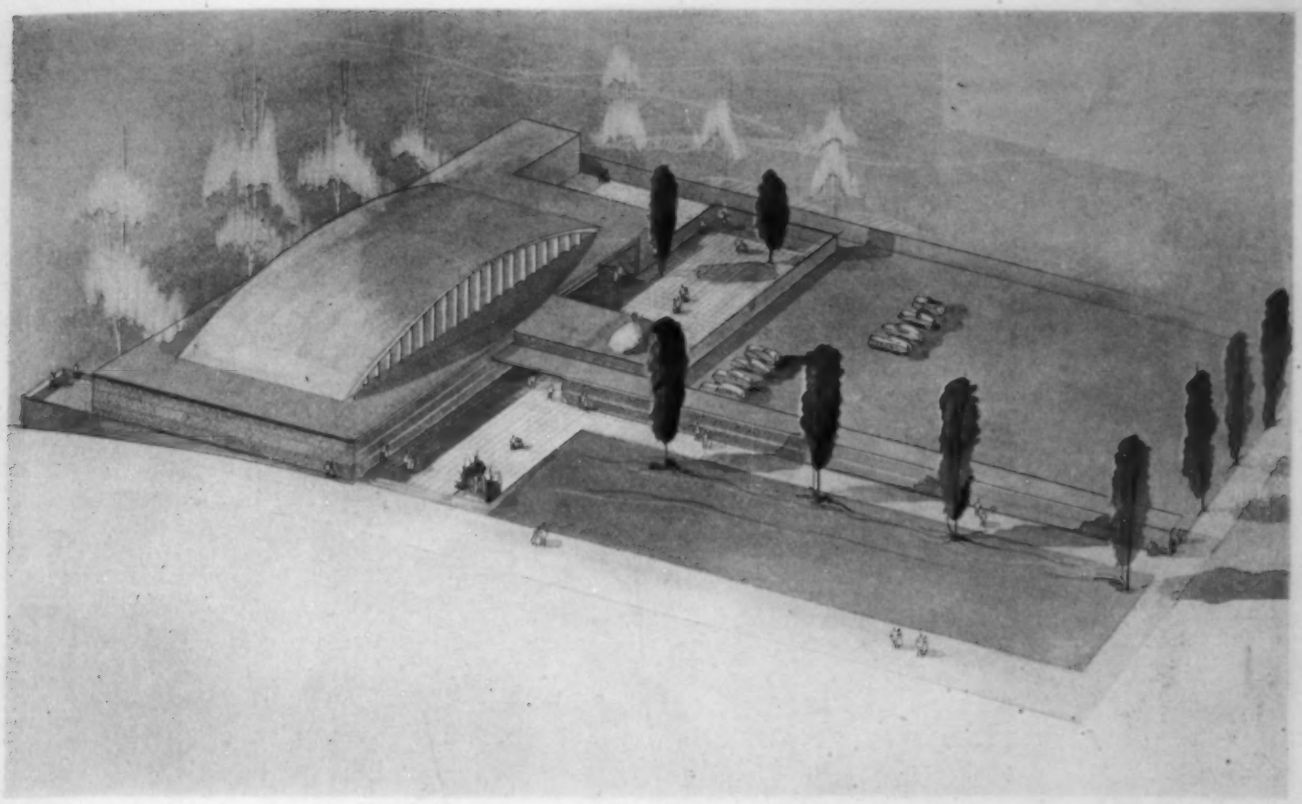


SYNAGOGUE PROPOSALS IN A



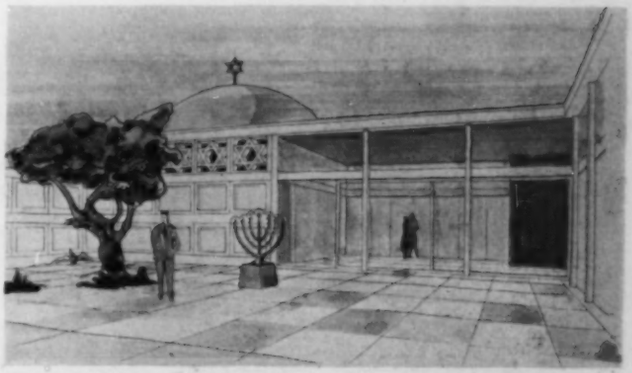






A NEW TRADITIONAL LIGHT

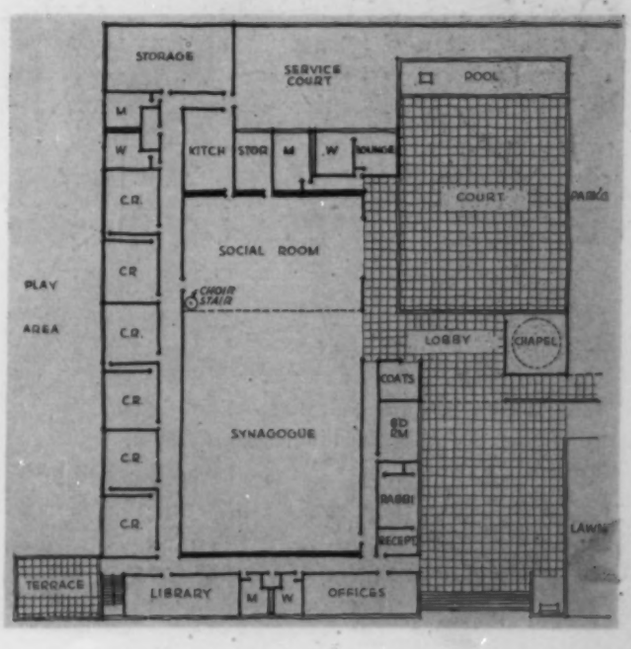
Percival Goodman, Architect

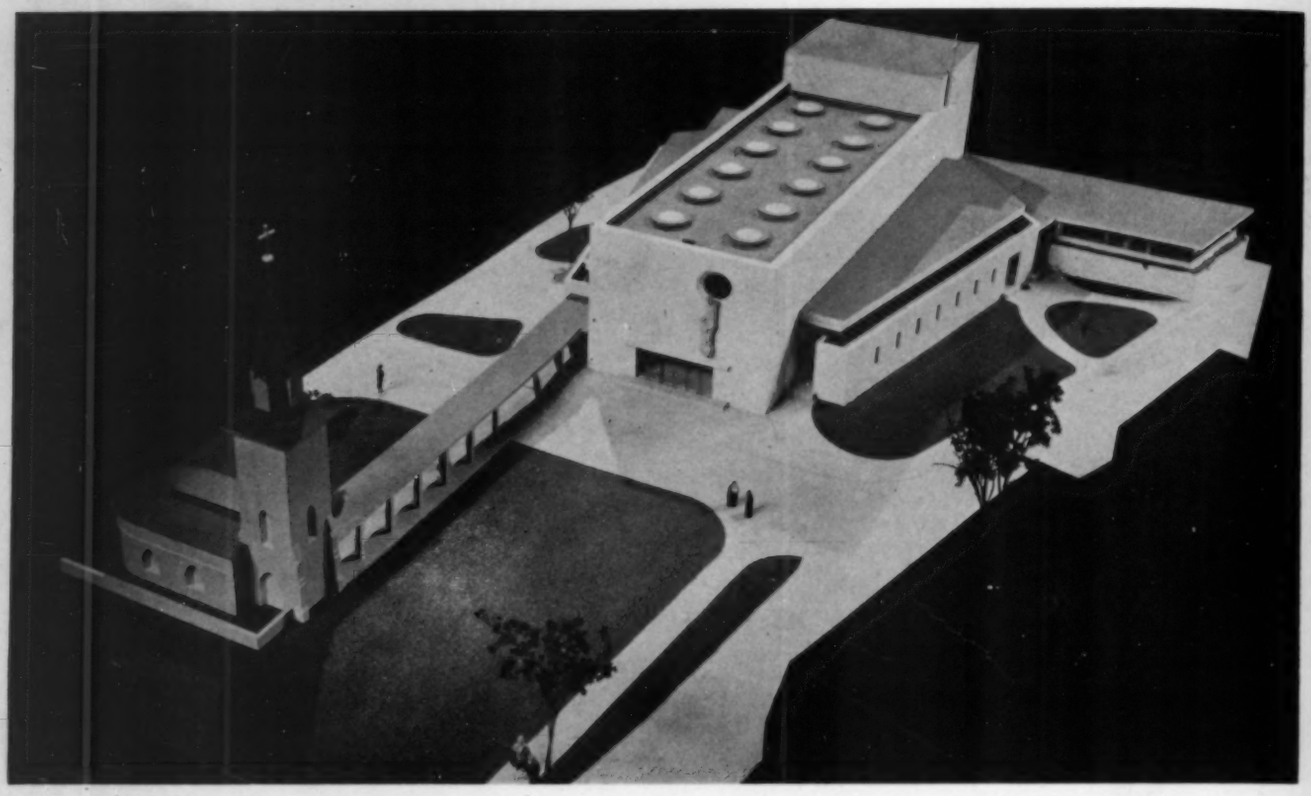


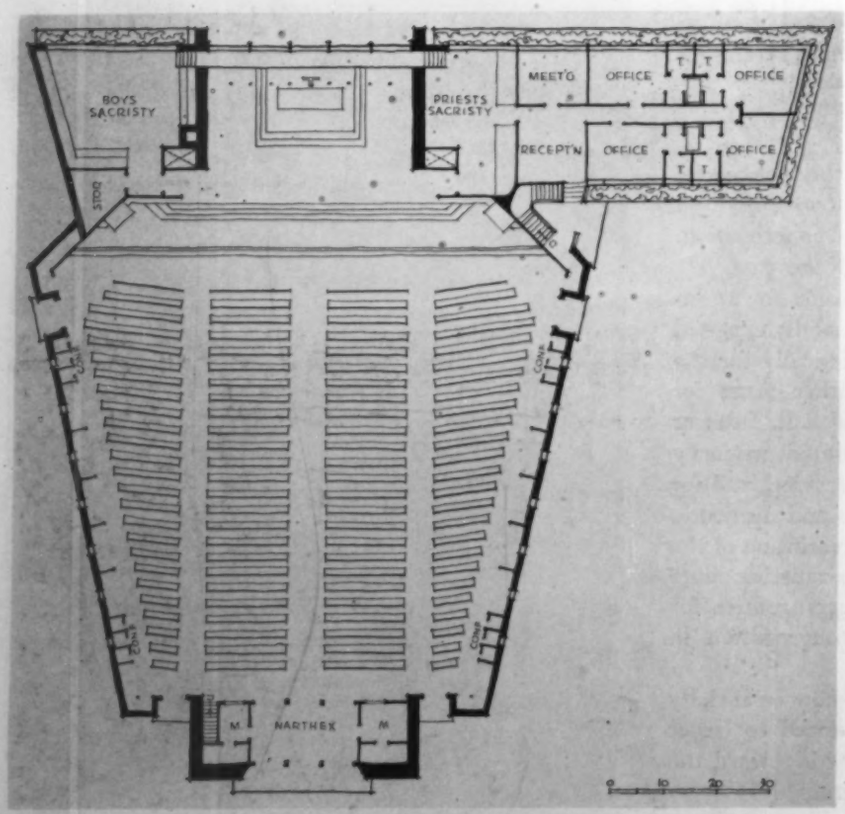
BELIEVING that "there is a tradition *in* the synagogue" (see page 97), the architect concentrates here on settings for historic functions of ritual and congregation, uncomplicated by external impositions of the past.

The proposal shown on the page opposite, for an interior city location, insures privacy by a solidly enclosed perimeter. The fore court serves ritualistically for the outdoor festival of Succoth, and at other times for gatherings in connection with the social hall. Interior treatment of the worship space is calculated primarily for congregational participation in the service, and for focus of attention on the sacred symbols and furniture. The plan at bottom of the page shows a variation of the same elements suitable for a location permitting more outward contact, and a variant seating arrangement for more intimate participation by the congregation in worship.

Plans and perspectives on this page show essentially the same elements and relationships carried to larger scale for a suburban site. The detail view is toward the lobby and chapel from the interior court.







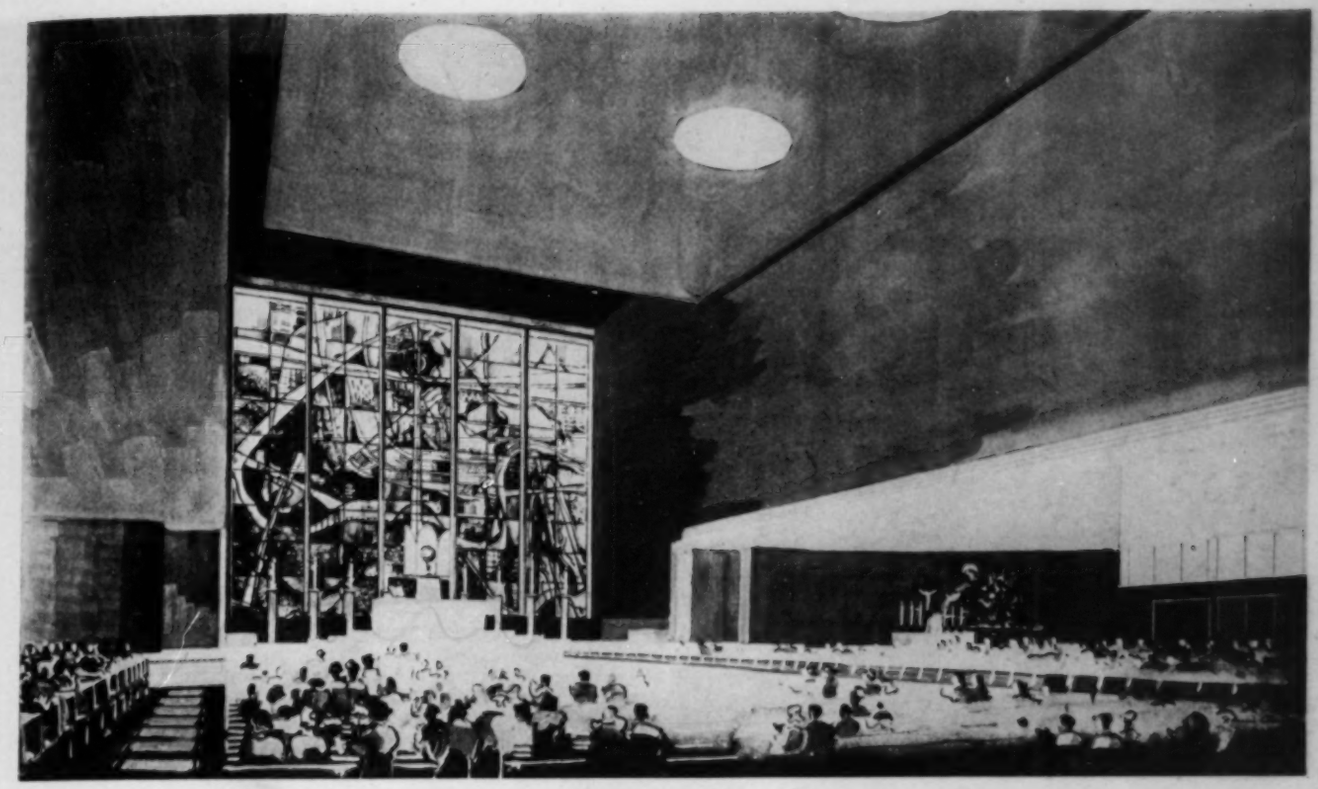
ST. ANN'S CHURCH, ST. LOUIS:

Joseph Denis Murphy

Architect

The nave, seating 850, is arranged so that every seat is within 105 ft. of the altar, with a full and unobstructed view. The floor slopes slightly toward the sanctuary; central ceiling height is about 26 ft.; side heights, about 13 ft. Central portion of the nave is daylighted by round skylights; side portions by continuous windows over the confessionals and shrines. Night lighting is from concealed sources.

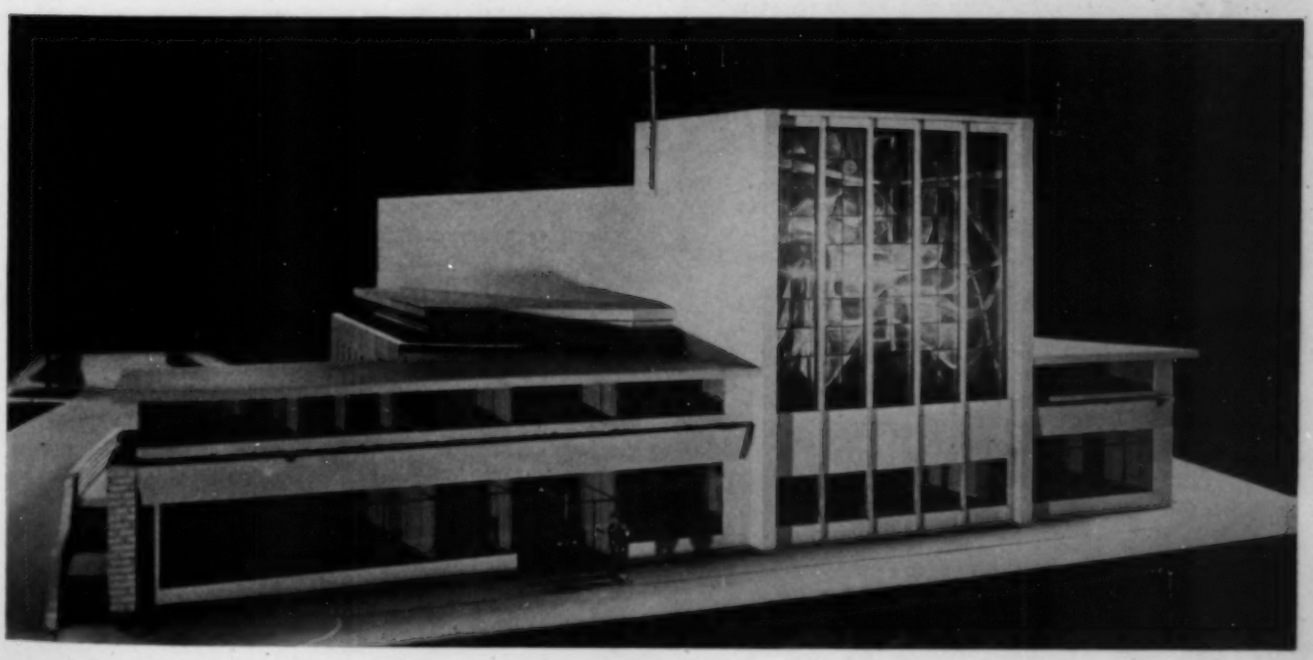
Exterior walls are of smooth-finished Indiana limestone. Over the main entrance is a statue of St. Ann and the child Virgin

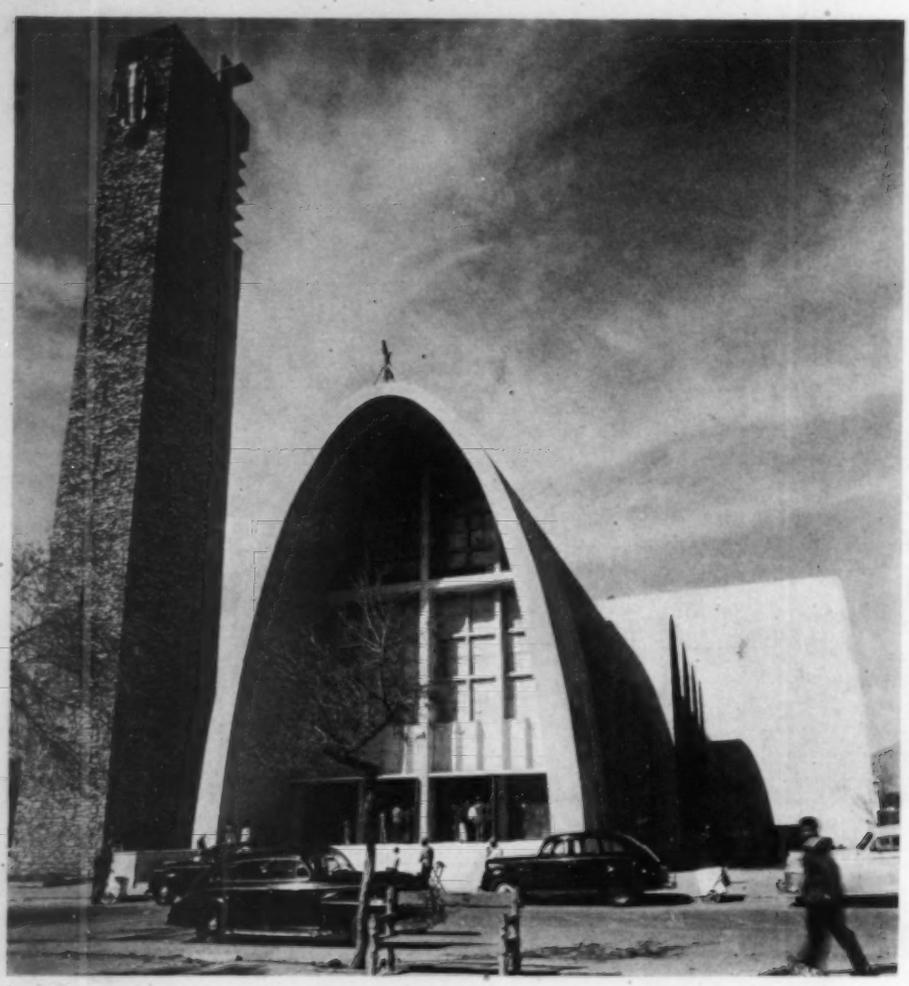


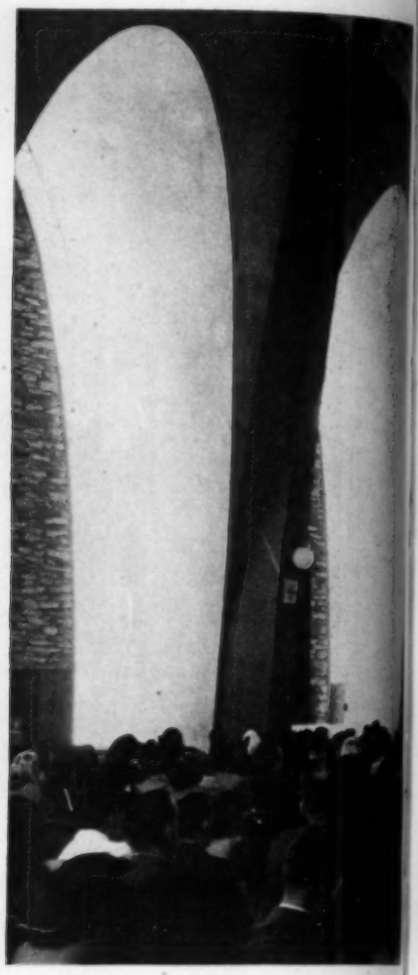
NEW DEPARTURE WITH AN ANCHOR IN TRADITION

CONTINUITY of tradition will be maintained in this new church for St. Ann's Parish in Normandy, a suburb of St. Louis, by retaining the old tower. At its base will be a chapel using stone and other materials from the original structure.

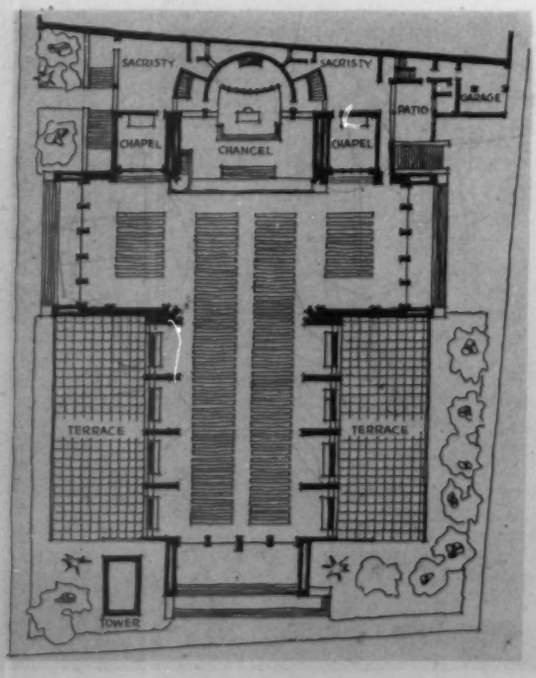
"The design of the new church," says the architect, "revolves internally and externally about the altar. The sanctuary, consequently, is the highest portion (36 ft.), and the richest materials and effects have been concentrated here." The background window scene of Calvary, with three dominant crosses, will be a tapestry-like depiction in stained glass by Emil Frei.





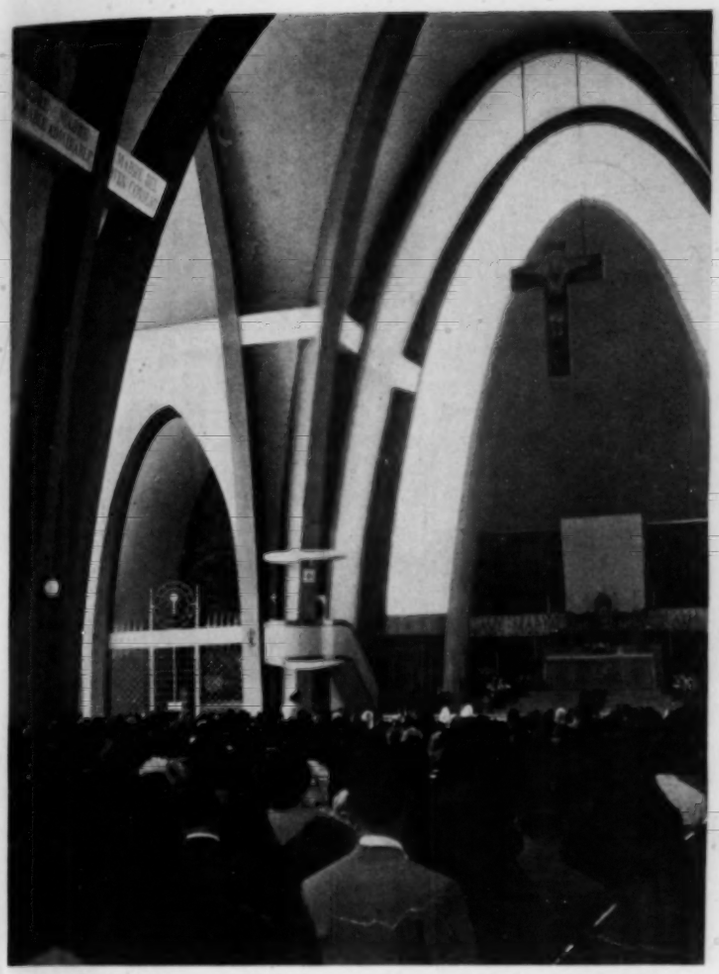


CHURCH OF LA PURÍSIMA, MONTERREY, MEXICO



THE architect describes Monterrey as a city "with a poor and precarious life, materially and culturally, during all the time of the Spanish colonial period. For this reason, it is practically devoid of the Baroque and Churrigueran precedents to be found in the churches of Querétaro, Mérida and other cities of the territory. Recently its economic and industrial development has been very rapid. At the same time, there has been an intensifying of religious spirit, more favorable, perhaps, to expression in contemporary terms than if there were stronger local influences of traditionalism. Monterrey is really a frontier city, spiritually as well as materially, producing steel, cement and glass. What was desired in this church was truly indigenous architectural and religious expression."

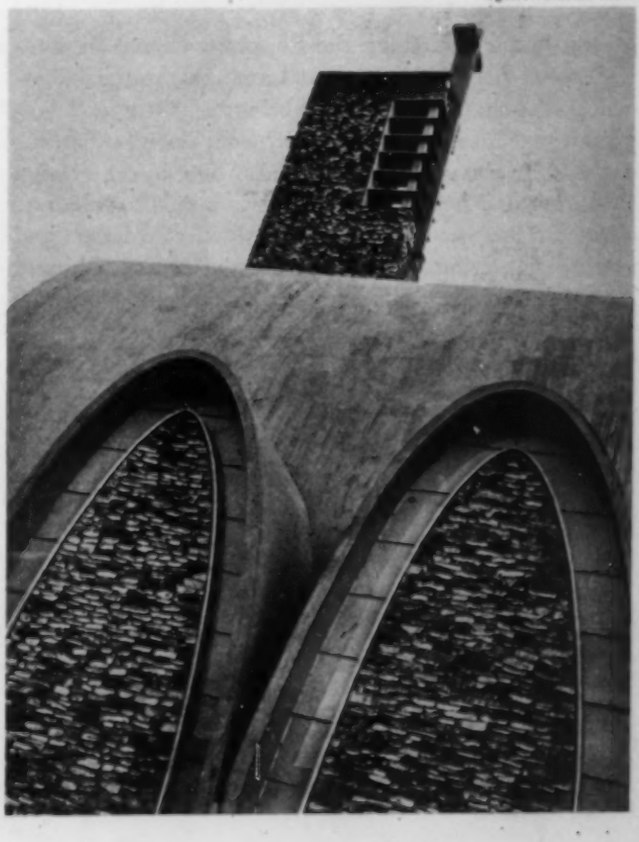
Denying that modernity "aspires to separate itself completely from the past," De la Mora says: "The new religious architecture takes from tradition not the *formal* but the *essential*. If today, we seek to solve a problem in support, we proceed according to principles that guided the best of the old builders, but with new



Van Evera Baily Photo

Enrique de la Mora, Architect

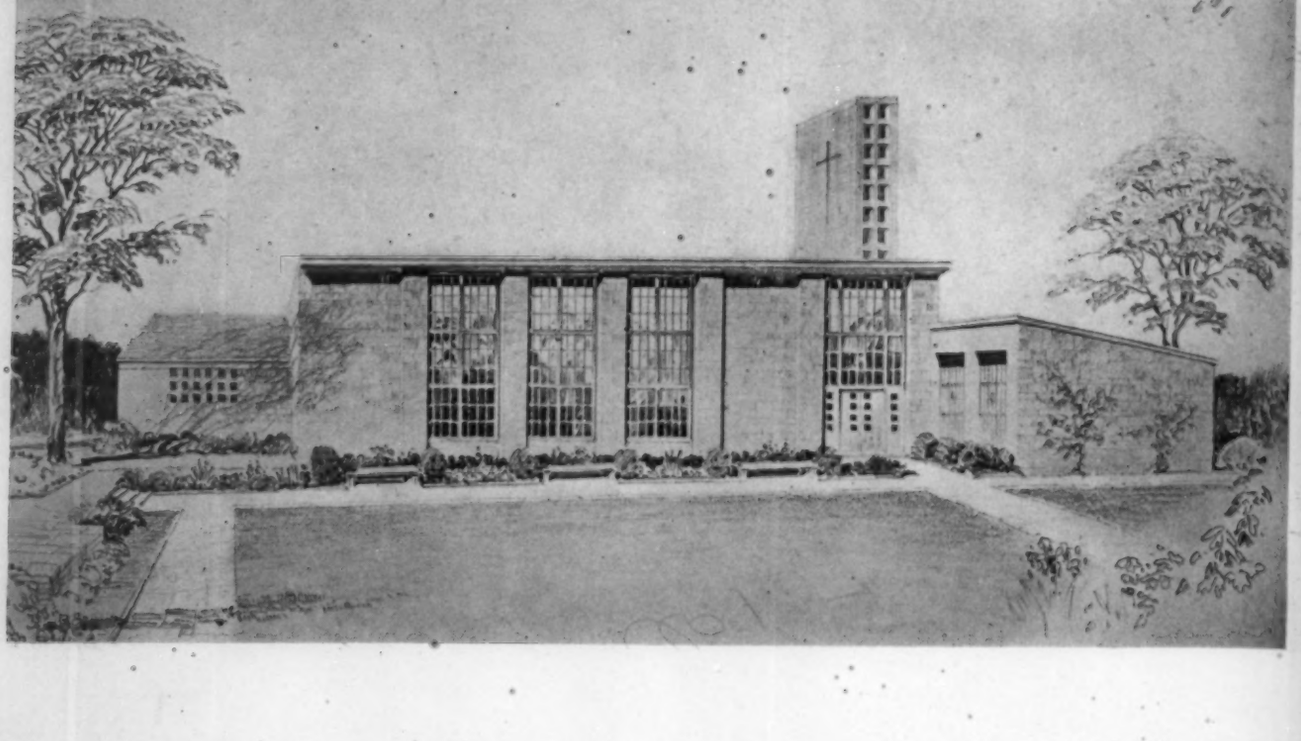
Augusto Palacios Photo



materials and methods at our disposal, we cannot help but arrive logically at new expressive forms.

"Almost any material can be modern. Modernity does not depend so much on the nature of the materials as the manner in which it is used. Tile, for example, is still a splendid roofing material, particularly in this region. When used straightforwardly for this purpose, it is a respectable modern instrument. When used as mere decoration, with no regard for its true functional and structural values, it becomes debased and unworthy. But the modern material *par excellence* is reinforced concrete.

"Religious architectural forms of the past accurately reflected the times and inspiration that brought them forth. In the past century there was degeneration into banality, due undoubtedly to degeneration in religious vitality. What is required today is a stripping bare of trappings. This does not mean impoverishment. There is a greater wealth today than ever before of means by which the new religious spirit can be made to stand out clean, unobscured and strong."

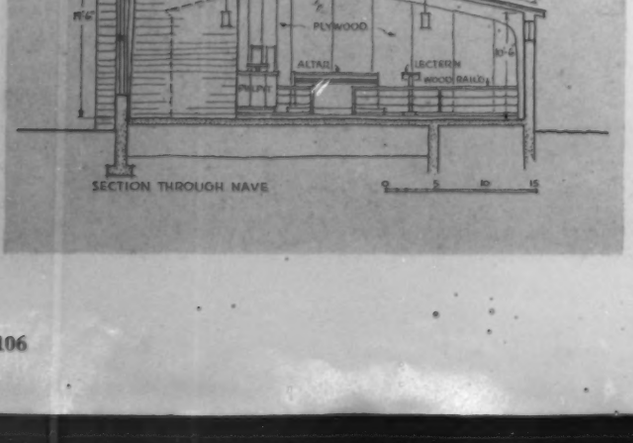


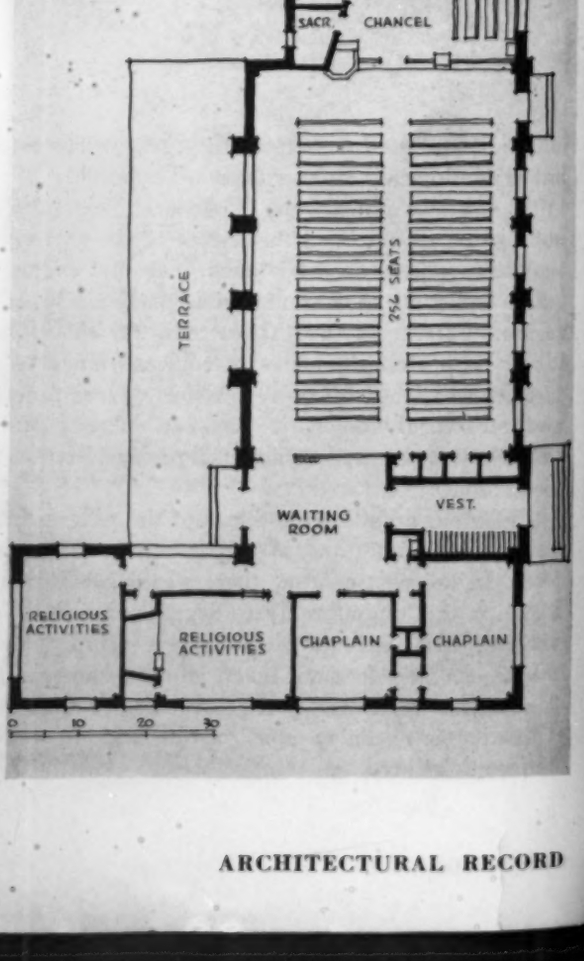
CHAPEL FOR PENNSYLVANIA INDUSTRIAL SCHOOL

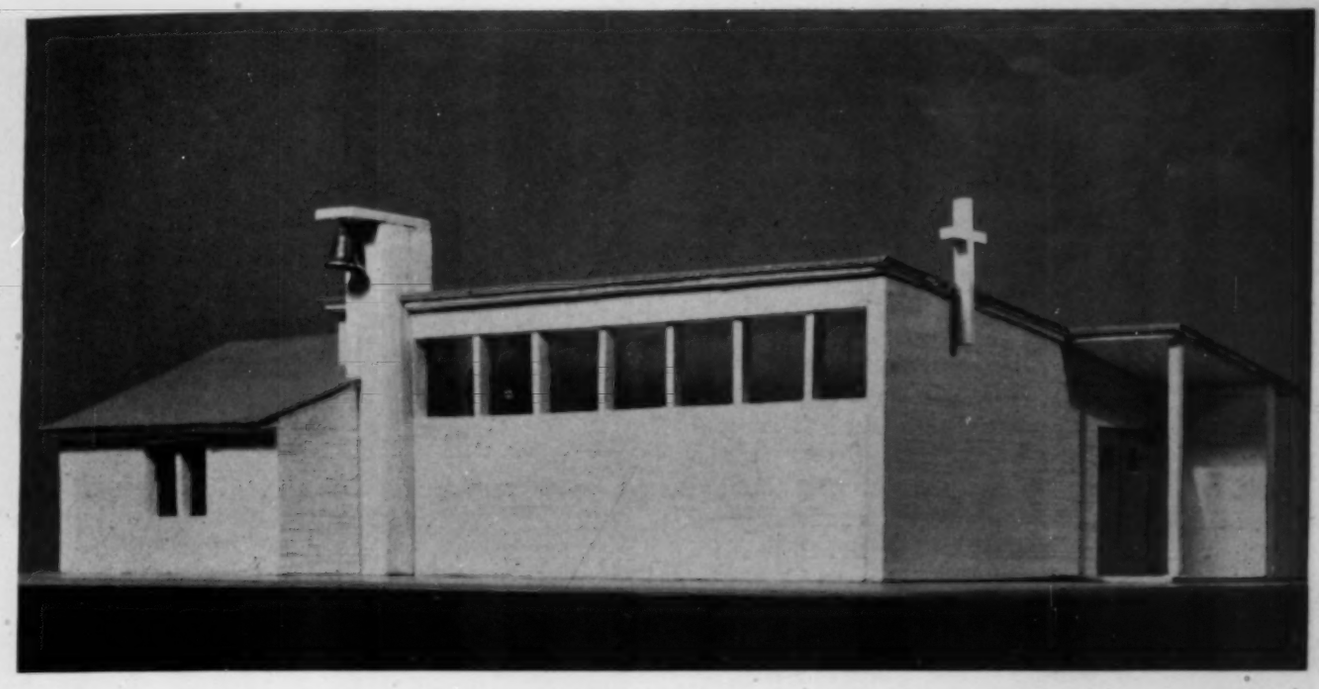
Alfred Hopkins & Associates, Prack & Prack

Architects

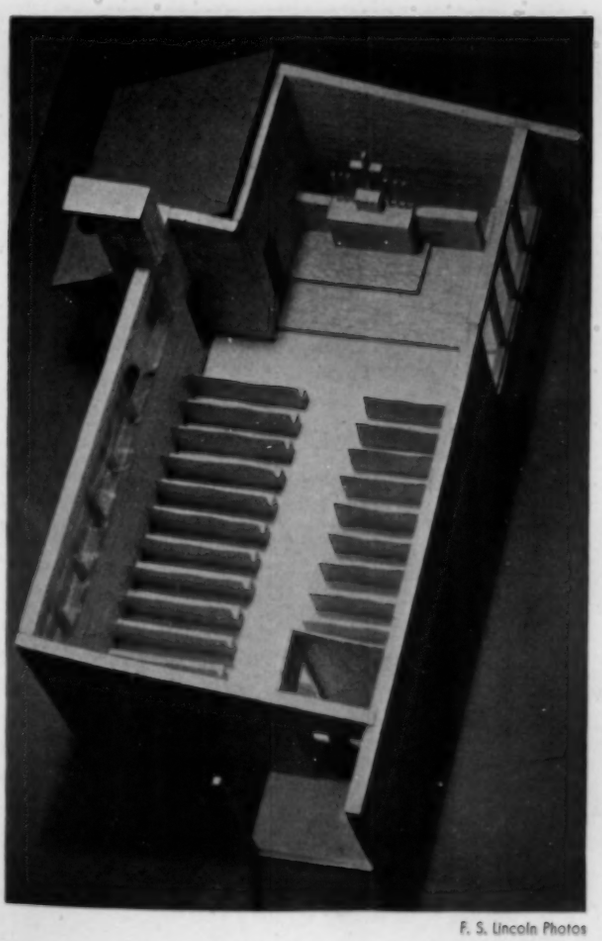
ONE factor in making the Rockview School environment "as little like a penal institution as possible" will be the chapel, designed to bring the Nittany Mountain Range into spectacular view from the interior. The large clear-glass windows will also overlook a garden and flagstone terrace, to be used as a dais for summer services. Proposed construction is concrete frame and cavity wall, using colored concrete blocks manufactured at the school for walls both inside and out. Trim will be stone, locally quarried by the inmates.







TEN RURAL CHURCHES FOR KANSAS CITY DIOCESE



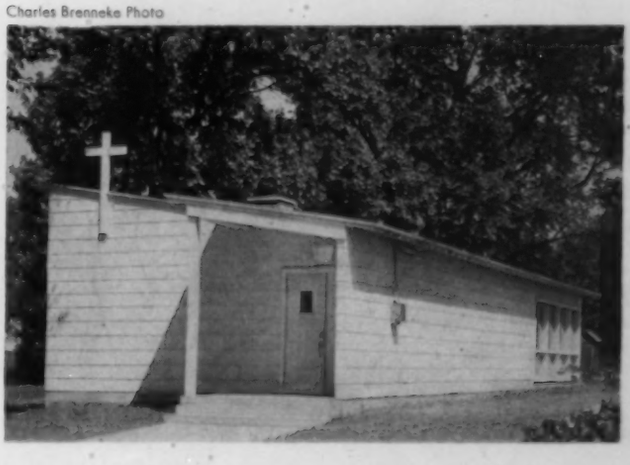
F. S. Lincoln Photos

Julian Whittelsey; Dom Hilary Martin, O.S.B.

Architects

THIS plan was developed, in collaboration with Charlton Fortune of the Monterey Guild, to provide churches from diocesan funds for Catholic communities of limited means. Reversed position of the sacristy (roofed portion, left) and alternate locations for the entrance porch give variety. Tower doubles as confessional booth and as chimney for furnace under sacristy. Choir enters at a lower level behind altar. Specifications were in various materials, depending on local availability; version below is at Harrisonville, Mo.

Charles Brenneke Photo



PROPOSED CHURCH GROUP FOR NORMAN, OKLAHOMA

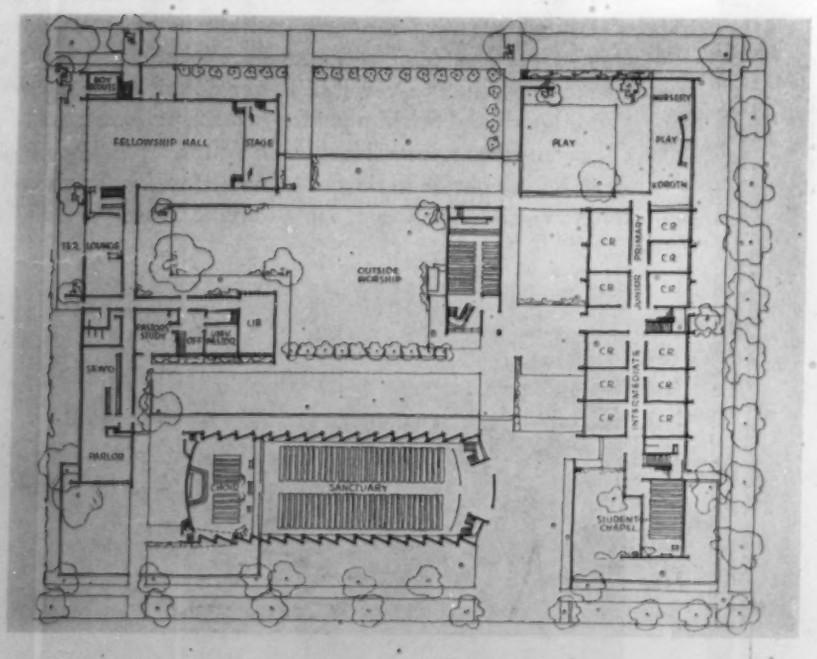
A Project Study by R. Bruce Miller,

School of Architecture, University of Oklahoma

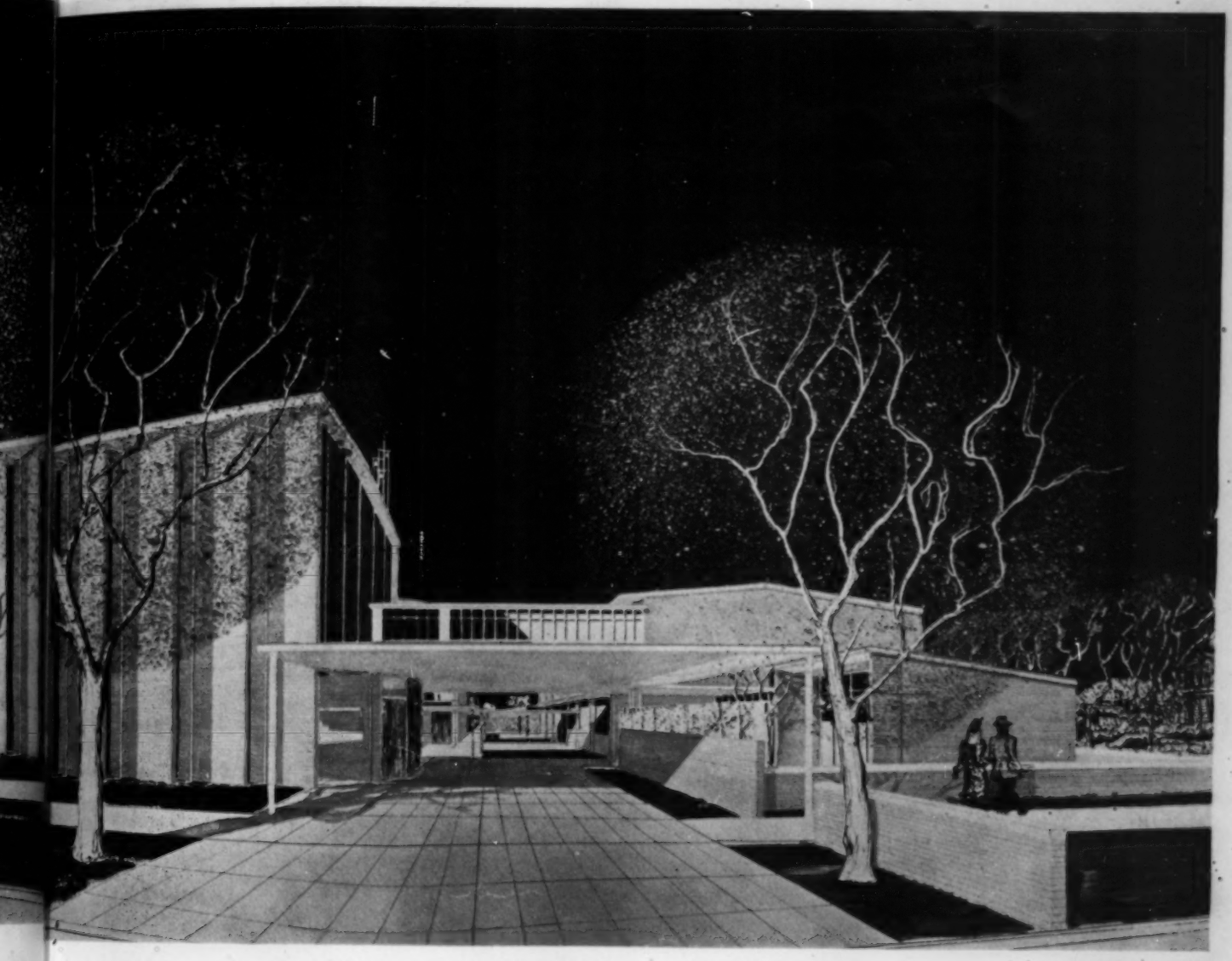
THIS project had two objectives: to gain credit for the author toward a Bachelor of Architecture degree, and to serve "as an educational aid in the building program of a local Presbyterian church." Success for the first is now a matter of record. For the second, there is strong likelihood that the project will be adopted substantially in its present form by the church building committee.

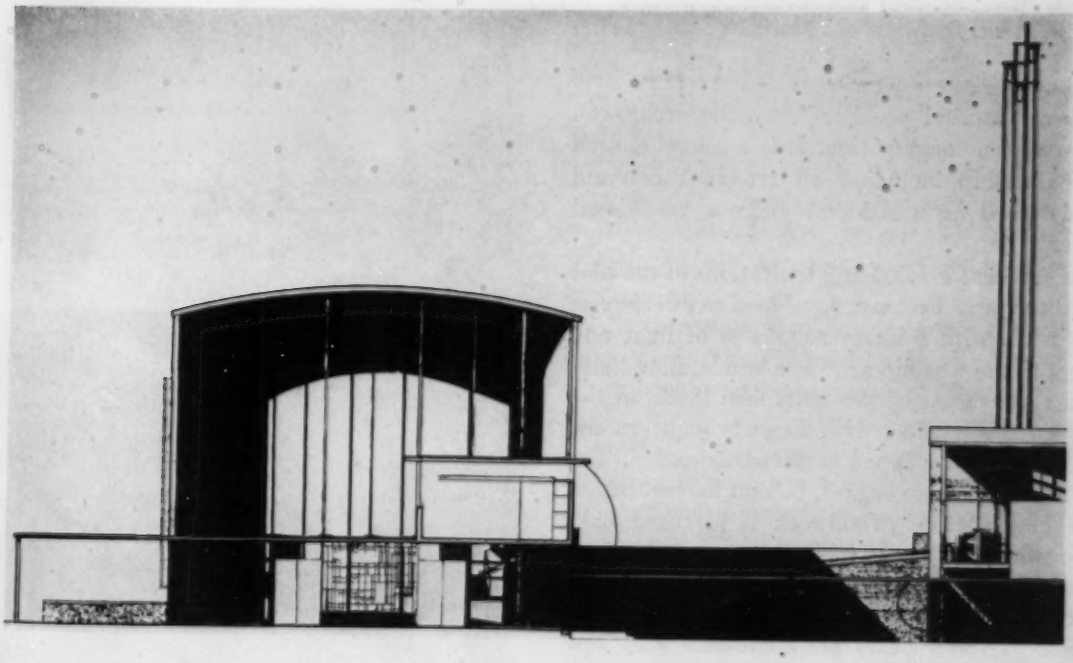
Structural frame will be all welded steel diagonal grid, supported by reinforced masonry columns and masonry bearing walls. Exterior finish will be buff-colored facing brick; gray unfinished concrete; exposed copper; gray asphalt paint on roof surfaces; and gray smooth-finish concrete paving surfaces, divided in modular squares. All major glass areas in the sanctuary and chapels will be clear-pane.

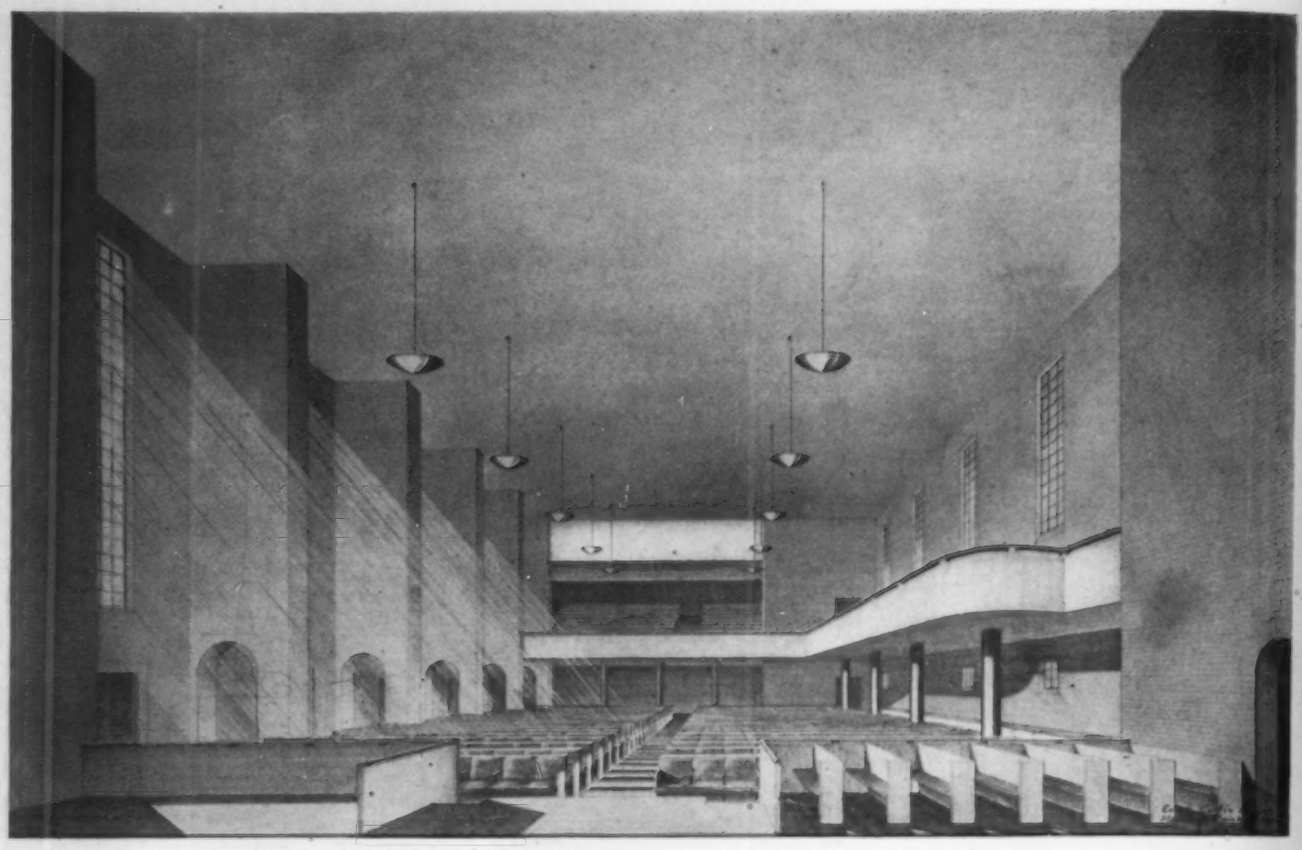
Shape of the sanctuary "offers the most economical spans for the given needed volume, and contributes to the desired illusion of height. Verticality is further accentuated by the fins and the slightly arched ceiling surface. The fins also exclude direct sunlight, and assist in directing the focus of attention toward the altar." The campanile, situated at the center of the group, is "the only symbolic marker."



Student chapel is for worship training and services of the younger members. Chapel at center of the plan, for adult worship and meditation, is really "the psychological center of the group," which accounts for the placement of the campanile. Not shown in the plan are balconies over the main sanctuary and central chapel, and second-floor classrooms for high-school, college and adult groups in the educational wing. All classrooms have movable partitions. Service pantry between fellowship hall and lounge is connected by dumb-waiter with kitchens below

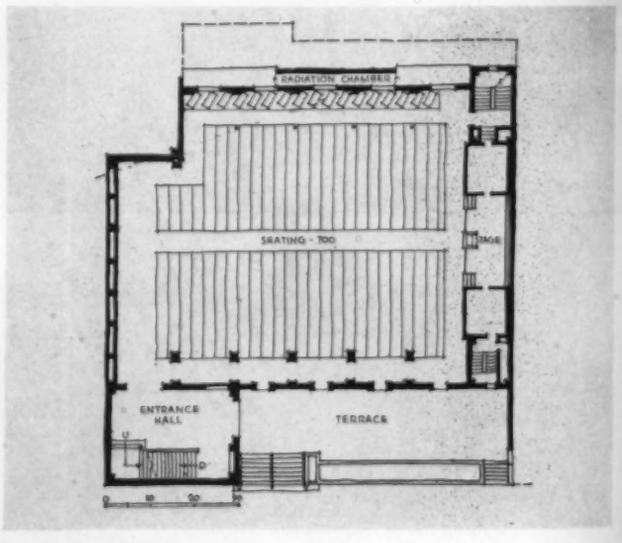






COMMUNITY CHURCH
NEW YORK CITY

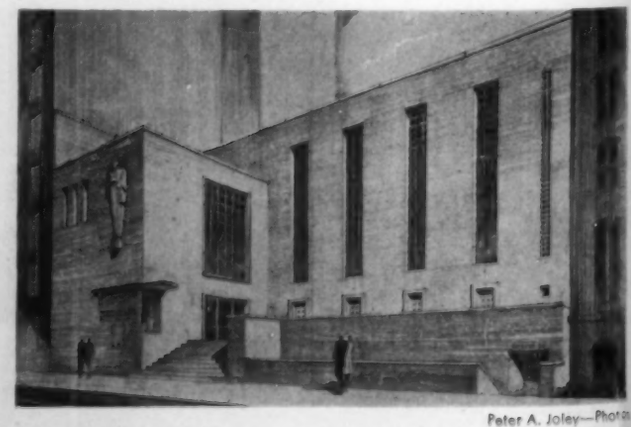
Magoon and Salo, Architects



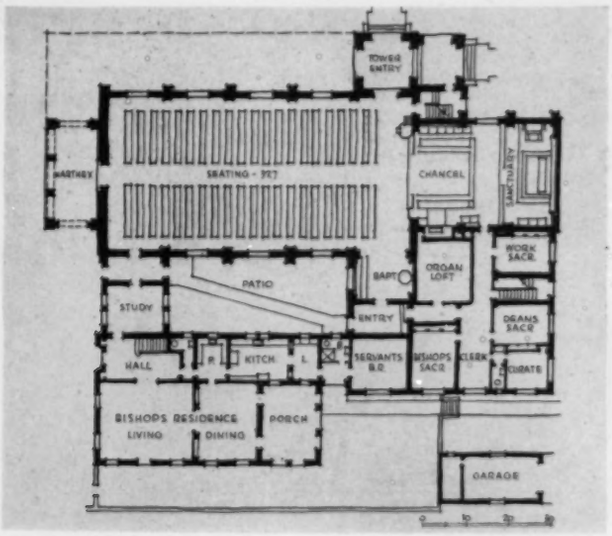
THIS was an unusual problem," say the architects, "for an unusual congregation. It is a liberal church with a membership including all creeds, races and colors. This freed us considerably from traditional stipulations."

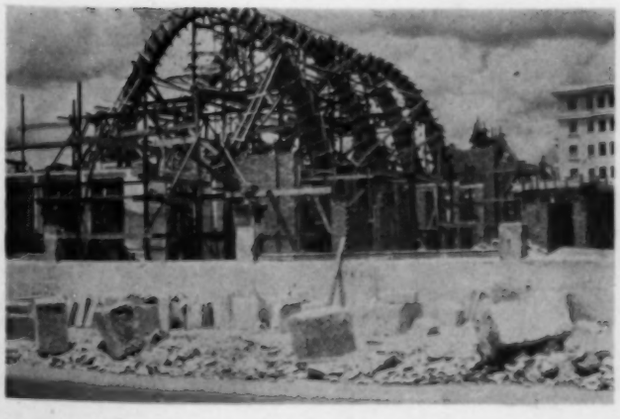
Required seating for 1,000 and limitations of the plot necessitated the large balcony, developed to interfere as little as possible with primary requisites of light and spaciousness in the worship area as a whole. Simplicity is achieved through use of the same face brick on the interior as on the outside, with focus brought to the sanctuary and altar by broad surfaces of marble. The chancel is flanked by two organs, behind louvers of red slate with bronze trim. Woodwork is bleached oak; ceiling, acoustical plaster.

"Lighting fixtures are more in accordance with present-day efficiency standards than with traditional appearances." Theater seats are combined with pew backs for comfort, and economy in spacing. Entire building, including social areas, is air conditioned.



Peter A. Juley—Photos





EPISCOPAL CATHEDRAL
HAVANA, CUBA

Coffin and Coffin, Architects

FORTY years ago, Architects Cram, Goodhue and Ferguson designed the original Cathedral Church of the Holy Trinity, built on a site now distant from most of the congregation's living places. Need for centralizing the cathedral, school, and residences of the Bishop and Dean in one location gave further basis for a new structure.

"No traditional style was desired, but as the choir and sanctuary furnishings of the former cathedral are of fine design and workmanship, they have been salvaged and incorporated, according to their original plan, in the new building. This gives the congregation a transition or continuity from the past to the present."

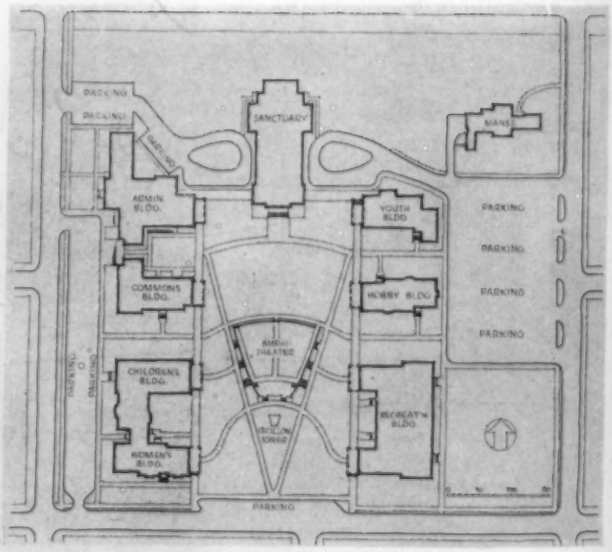
Concrete arches have been used in the nave both to eliminate columns and to implement the clerestory, considered a most desirable feature for the Cuban climate. Construction throughout is reinforced concrete skeleton, designed to withstand winds up to 130 m.p.h., with brick filler walls and partitions. Ceilings of nave and chancel are acoustical tile; lighting is indirect fluorescent.

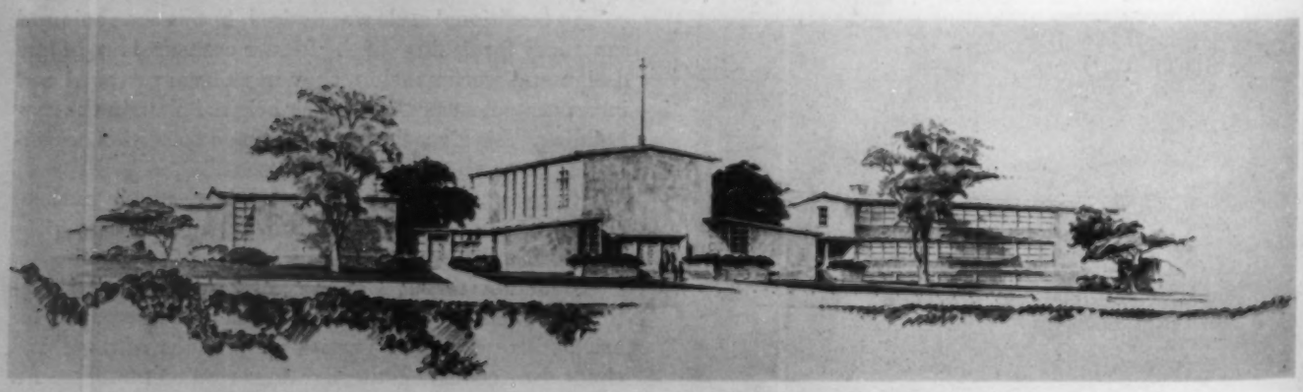
Photo Associates Photo

UNIT PLAN, DALLAS, TEXAS

Tatum, Alexander and Quade, Architects

GROWTH toward final objectives of the Preston Road Christian Church will be by unit stages. First units will be those shown in plan as Administration and Commons buildings, their original designations. The model (photo above) shows them in such character, at a time when "the most vocal committee element wanted something colonial." Latest phases (below) show the Commons Building revised, in the light of restudied needs, as an educational unit, and since the Administration Building auditorium will be used at first for worship, this unit now has a more churchly appearance. The more contemporary character in general results from "reasons of economy and sincerity."





ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

THE ACOUSTICS OF CHURCHES

By Clifford M. Swan, Acoustical Engineer

If good hearing is to be achieved in an auditorium, care and forethought must be given to the subject from the very outset of the planning. Three major items require the consideration of the architect: (1) the effect of the design, including shape and size; (2) the sound-absorptive qualities of the materials to be used as an interior finish; and (3) the possible need for electro-acoustical amplification. Each of these must receive critical study to provide suitable solutions to any acoustical problems without interference with esthetic or practical considerations.

Design

The greater the size of the auditorium, the more urgent is the problem. In any large enclosed space, it is usually difficult for the speaking voice to be heard without strain, both on account of the long distances to which the sound must carry and because of the confusion created by the reverberation, a factor which is directly proportional to the volume of the room and to the loudness of the originating sound. Height increases the volume of the room and hence the reverberation, and causes direct reflections from the ceiling to be damaging rather than helpful.

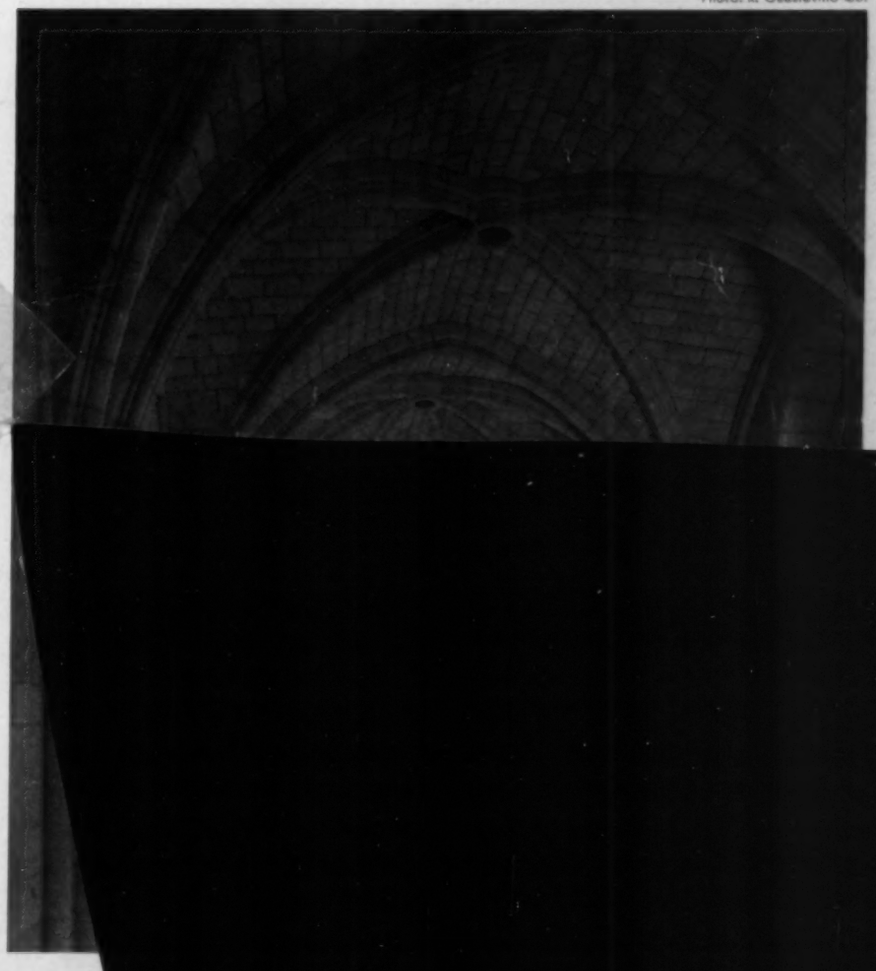
Another factor in the design which should be watched is the curvature of walls or ceilings. Concave curved surfaces like domes or arches act as mirrors to focus the sound in certain definite regions and thus produce echoes or sound images. Curved walls will do the same. The radius of curvature of ceiling surfaces should always be either considerably less than the height or greater than twice the height. Any radius between these limits is likely to cause trouble. Curiously enough, the wrong curvatures are generally the ones which most appeal to the architectural eye.

Due to reverberation and to reflection from surfaces distant from the ear, some portions of an auditorium are especially poor for hearing. These are commonly but erroneously called "dead spots." In a cruciform church this region is usually near the center aisle just back of the crossing. In a rectangular auditorium it is about two-thirds of the way back.

For all of these reasons, large churches require special care in eliminating or correcting possible sources of trouble. Small churches are more easily dealt with, but even these have their problems. In any case, these factors must be studied and provision made for acoustical correction while the building is still in the planning stage when the change of a pencil line can obviate expensive or difficult structural changes later.

In connection with the design, a word should be said about the best location for sources of sound. When no electrical amplification is used, the best place for speaking is from the altar, while the worst place is on the axis of the church at a distance from a wall, as, for instance, from the chancel steps. Pulpit and reading desk should be placed at the side against a wall or column. Sounding boards are of little value, but if used they should never be curved but always horizontal plane surfaces of considerable area hung low over the location most

Photo: R. Guastavino Co.



Structural
Gothic Cha

commonly used by the minister.

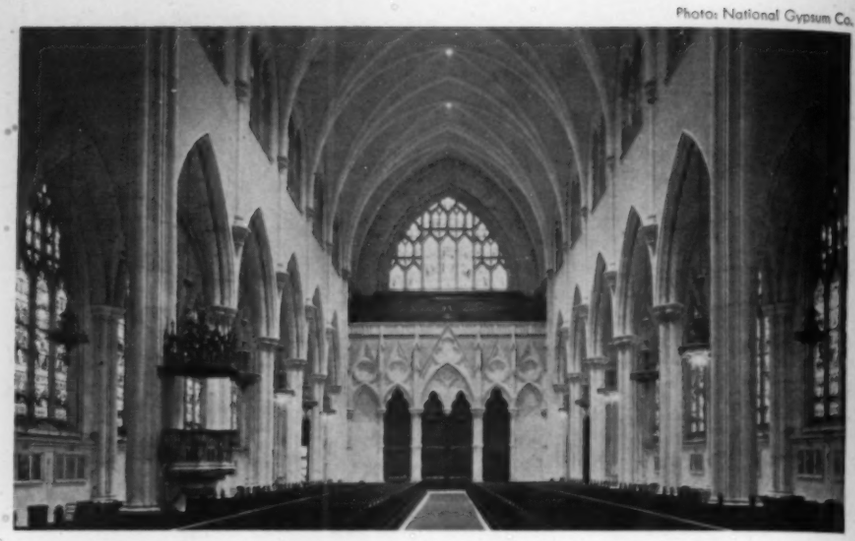
Although it is not the custom in many denominational churches, the best and most logical place acoustically for the choir and organ is in the rear gallery. The resonance needed for the music can be provided better here without interference with the spoken word, and the distribution throughout the church is improved.

As a rule, a wide auditorium is difficult for speaking. The congregation needs to be in front of the preacher where it can see his face and watch his lips. Persons seated far on one side hear well only when the speaker's head is turned toward them, in which case those on the opposite side are correspondingly hampered by being thrown into a sound shadow. Electro-acoustical distribution then becomes the only possible cure.

Reverberation

Excessive reverberation is an ever present menace to comfortable hearing, but it is readily cured by absorption of the unwanted sound reflections by suitable materials in proper amount and location. The larger and higher the auditorium, the greater will be the reverberation and the worse the confusion caused by it. Furthermore, the amount of reverberation increases with the loudness of the initial sound, so that attempted cures by public address systems simply make matters worse by making the initial sound louder and the reverberation more pronounced. It would seem as if there were a dilemma here, since reduction of reverberation lessens the carrying power of the voice while amplification in any marked degree restores the reverberation. The answer lies, not in using "loudspeakers"

Photo: National Gypsum Co.



To reduce reverberation, wall ashlar is surfaced with structural acoustical tile, and vaulted ceiling with acoustical plaster in St. Joseph's New Cathedral, Buffalo; Eggers and Higgins, Architects. Here, acoustical plaster is a weight-saving factor

tion, but in a limited amplification so designed as to reinforce the sound only in those regions where it is necessary, and then only to a degree which will make it comfortably heard. Before discussing this, however, let us first consider the various sound-absorbing materials.

Sound Absorbents

The usual fireproof building materials used in the construction of a church have little absorption for sound. Even wood sheathing has an average absorption of not over six per cent. On the other hand, carpets, rugs, hangings, cushions and the clothing of the congregation are highly absorptive, especially of the higher frequencies. If present in sufficient quantity and in the right places, these materials may correct conditions in a small church, but almost never in a large [illegible]

ticularly on surfaces in the upper part of the auditorium where reflected sound is most harmful, or indeed on any surface where reflections are not wanted. The amount and exact location of the corrective materials is partly a matter of calculation and, even more, of experience.

Materials used for this purpose may be grouped under four heads — acoustical plasters, sprayed fiber, felts, and tiles. (For noise-reduction coefficients of the various types of acoustical materials, see Time-Saver Standards, ARCHITECTURAL RECORD, March, 1944.)

Acoustical plaster installations require careful supervision to make sure that their efficiency is not impaired by carelessness or inexperience. While plasters have lower absorption coefficients than other types of acoustical materials, there are cases where surface curvature or low cost and weight make them desirable. Sprayed asbestos or rock wool

ceiling. (Center) Another treatment of warped
iber can be sprayed on prepared surfaces

Photo: National Gypsum Co.

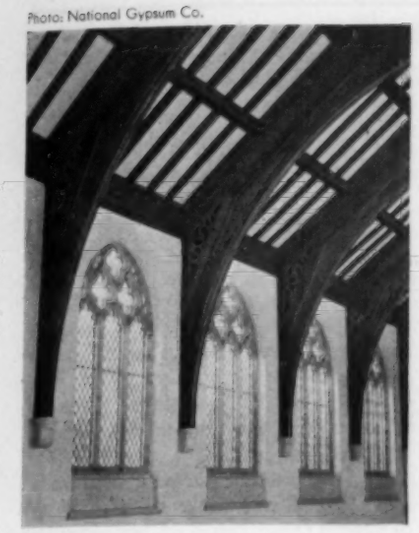


Photo: U. S. Gypsum Co.

Acoustical board of wood fiber applied between rafters and purlins; Grace Lutheran Church, Fremont, Ohio; Cram and Ferguson, Architects. (Right) Vaults and wall spandrels faced with acoustical tile in Church of the Holy Child, Phila.; George I. Lovatt, Architect

fiber has the same advantages and a very high efficiency, and offers a solution for domes and warped surfaces already built.

In the early days of acoustical correction, hair felt was the almost universal means of absorption. Today, felts are more usually made of rock wool or glass wool. While felt is now applied less frequently in churches, there are still cases where it can be used to advantage. It is useful for covering the ceiling panels between the purlins of a wood ceiling, but instead of its being covered with cloth or burlap as in former days, it is now concealed by perforated asbestos board which permits the free passage of sound through the holes and which can be painted as desired.

Particularly suited to ecclesiastical architecture is acoustical tile, prefabricated to a fixed and definite absorption characteristic. Tiles may be classified under two heads, those which are non-structural and are glued to the treated surface, and those which are structural masonry materials incorporated in the fabric of the building. The latter is used as a facing course either for wall ashlar or for vaulted ceilings and is strictly fireproof. At the time of the great fire which destroyed the interior of the Riverside Church in New York during construction, the acoustical tile was the only material undamaged by the heat. This material has been and is being extensively used in the building of stone churches, from large cathedrals to small parish churches. Among these may be noted the Cathedral of St. John the Divine, Riverside Church, and Christ Methodist Church, in New York; Grace Cathedral, San Francisco; East Liberty Presbyterian Church, Pittsburgh; Girard Chapel, Philadelphia.

The illustrations show two interiors where this material was used. In the Gothic Chapel of The Cloisters Museum, New York, all of the vaults and ribs and the wall ashlar are surfaced with it. In the great nave of St. Joseph's New Cathedral, Buffalo, it is used for wall ashlar, while the groined surfaces of the ceilings are finished in acoustical plaster, the latter material being used in this instance because it is lighter than masonry construction. Normally, the masonry tile would be used for the vaults as well as the walls, as in the case of the Riverside Church and other churches.

The painting of acoustical materials, when necessary, is a matter to be undertaken only with the greatest caution. Since such materials depend for their absorptive value on the porosity, any form of paint which films over the pores will seriously reduce the efficiency, especially in the higher frequencies. Spraying with a thin paint is to be preferred, but where this is not possible the manufacturers of the acoustical material should be consulted. Some materials lend themselves more freely to decoration than others. Plaster is the most difficult of all.

Amplification

In large churches where it is difficult for the unaided voice to reach all parts of the auditorium, or where the audience is so scattered as not to be entirely in front of the preacher, it is desirable to use a moderate amount of electro-acoustical reinforcement, just enough to build up the intensity in those regions where it is needed for comfortable and distinct hearing. The ordinary public address system is seldom suited to this purpose. Such systems are well enough for covering large out-of-doors areas where loudness is the desideratum while quality of tone and high-fidelity are unimportant. They are not usually adapted to the niceties of the artistic solution whereby the sound is reinforced only in specified areas in an auditorium, and then only to such a degree as to produce easy understanding of the spoken word without conscious awareness of the artificial aid. In order to accomplish this result, not only must amplifiers be constructed so as to give a faithful reproduction of the voice, but the sound-projectors themselves must be designed for the same purpose and should be so placed and oriented as to distribute the reinforced sound only to those regions where it is needed.

In the correctly designed system, only one sound-projector, or assembled group of such projectors, should be used for any one given source, and should be placed as near that source as possible in order to preserve the illusion of there being but one point of origin. In the case of a pulpit, the projector can be mounted directly above the preacher's head, on top of a canopy or tester hung over the pulpit. The projector is readily concealed from view by open-work tracery surrounding it. When the choir must be included in the amplification, or where there are transepts or a very wide auditorium, supplementary projectors should be added to the first, at the same point, and oriented so as to accomplish the desired distribution.

In all cases of directing the sound from a projector, it should be remembered that persons seated near the source do not need the help of amplification. Only those at some distance need it, and the projector should be set at the proper angle to cover the remote seats and not those in front.

In some churches, microphones are desired on the altar or reading desk or in the choir, and sometimes even for the organ. All of these cases will require study as to design, position and orientation of the appropriate sound-projectors. The amplifier and panel-board for the whole system can be placed in a nearby room or unoccupied space. It is well to have a stop on the volume control so that inexperienced or careless attendants cannot operate the system at a level louder than it was designed for.

An amplifying system like the one just described should be designed to fit each individual case. Specially constructed systems of this sort have been installed in the Riverside Church and Trinity Church in New York City, East Liberty Presbyterian Church, Pittsburgh, Church of St. Andrew and St. Paul, Montreal, Worcester War Memorial Auditorium and other places. The somewhat greater expense of such an installation is amply justified by the perfection of the results.

SUBTLE SOUND-REINFORCEMENT

Data from R. N. Marshall and C. W. Reynolds, Western Electric engineers; and C. C. Randolph, Western Electric Shops

UNTIL a sound-reinforcement system was designed for Centenary Methodist Church, Winston-Salem, N. C., one-third of the worshipers could not hear properly. Preliminary investigation showed that power amplification was not the answer: the average speaker could be heard, but not understood. The problem was one of reverberation, accentuated by the location of the pulpit in the center between the two transepts, at almost the precise focal point of the domed choir section.

In addition, low-frequency sounds were little absorbed while high frequencies were dissipated, due to the acoustical wall treatment which had been applied somewhat too thinly for uniform frequency absorption. Vowel sounds echoed around the church while the intelligible consonant sounds were rapidly removed from circulation.

Acoustical correction meant creating an unobtrusive system that would (1) increase the ratio of direct to reverberant sound reaching the listener while (2) restoring the balance between vowels and consonants.

Step (1) was effected by locating a number of sources overhead so that a plane wave of sound would be propagated directly over the listener's head before reflection could take place. From overhead, phase differences are very small so that a person has difficulty in locating the true source.

Step (2) was to use a special microphone that accentuated consonant sounds, thus restoring the balance needed for good articulation.

From a strictly sound-engineering viewpoint, best results were obtained with 10 speakers rigged 15 ft. overhead and 15 ft. apart in two rows over the two main rows of pews. However, this solution was architecturally embarrassing.

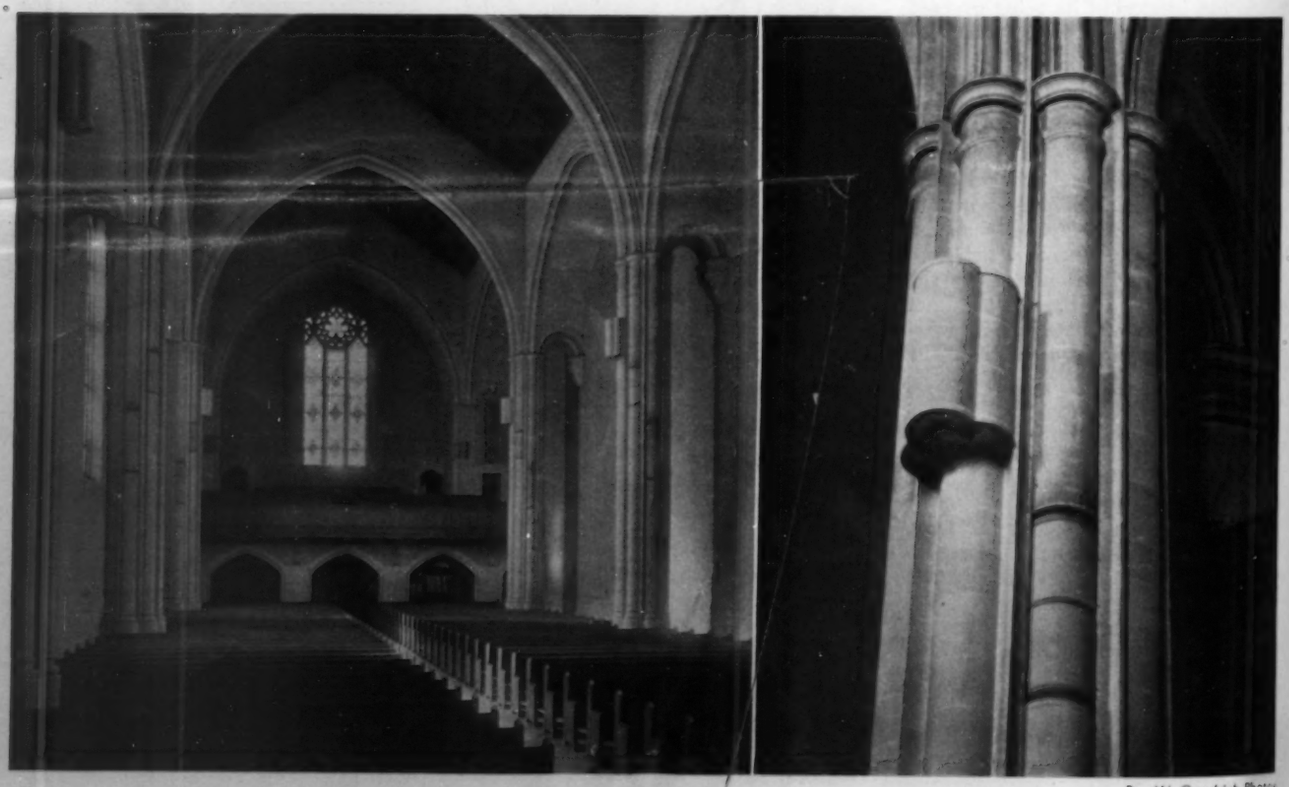
Instead, it was decided to mount six speakers 30 ft. overhead on the inside of each of the six massive pillars, concealed in specially designed housings which repeat the vertical lines of the clustered columns.

The box was made from a wood frame and plywood ends. Sides are three pieces of formed aluminum sheet, welded at the inverse seams and screwed to the frame. The speaker baffle is above the bottom grille and set at a 15° angle.

Finish simulates the neighboring stone; a flat base grey, followed by a brownish shading stain to match natural aging of the stone; and mortar lines simulated by a light grey stripe of paint. The sound aperture is covered by grey rayon cloth.

The careful listener will occasionally notice that the sound is coming from a source other than the minister. Yet, the general aural illusion is good and helped by lighting the lectern so as to attract the eye to the minister.

Centenary Methodist Church, Winston-Salem. Speakers are concealed in housings that repeat the vertical lines of the clustered columns



Ray W. Goodrich Photos

AND NOW—THE PANEL-HEATED APARTMENT

Leonard Schultze and Associates, Architects; Slocum and Fuller, consulting mechanical engineers for radiant heating; Richard Crittall Radiant Heating, Inc., technical advisors; J. L. Murphy, Inc., heating contractors

Two of this country's first panel-heated apartment houses are nearing completion on New York's upper Madison Avenue. Both buildings feature apartments of the luxury type — to be sold as "cooperatives" — and require a high standard of occupant comfort.

The owners point to the advantages of panel-heating: (1) even heat over large areas; (2) comfort at lower temperatures due to the radiant effect and resulting lower humidity; and (3) cleanliness due to the relative absence of convection currents. At the same time, such a system calls for sensitive controls and flexibility of operation when used to heat living quarters, particularly in an apartment house with its diversity of exposures and varying occupant requirements.

Presented here are details of the panel system in one of the buildings, at 15 East 91st St. The other, at 47 East 87th St., resembles it in size, character, and heating arrangement.

All apartments are heated by low-temperature ceiling radiation from pipe coils in two systems of panels, one for normal heating and the other for auxiliary heating. The temperature of water in either circuit can be varied independently. A careful system of temperature controls is provided for the automatic zoning of the building, and controls are located in each room for operation by the tenant. Controls are automatic in all master rooms; manually operated in others.

According to John Pryke of Slocum and Fuller, consulting engineers on the project, ceilings are chosen as the radiating surface because they provide a more even heating effect throughout the entire room, unobstructed by floor coverings and furniture. Floor-to-ceiling temperature differential is expected to be about 2° F.

The ceiling surfaces are heated by hot water circulating in pipe coils embedded within one inch of the underside of the 5-in. floor slab or in hung ceilings, as determined by the architectural treatment of the room. Certain exposed rooms on the upper floors are also provided with wall coils located beneath windows to offset excessive heat loss. Interior bathrooms have special treatment, in that radiation emanates from pipes just below the tile floor, to give a warm surface under foot.

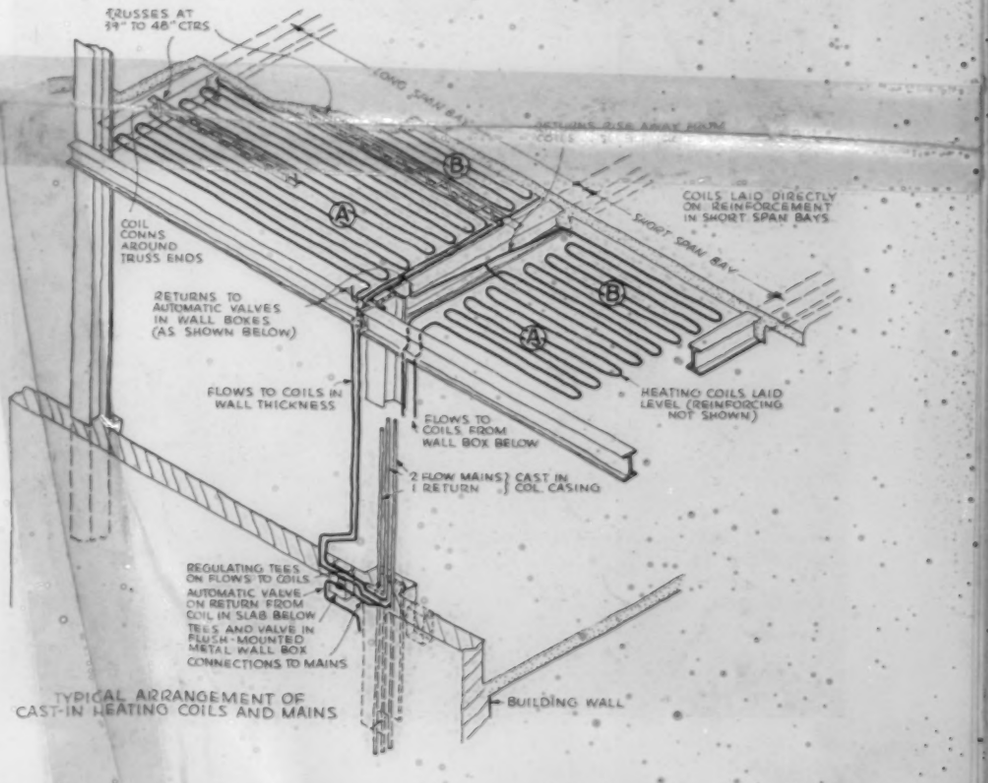
The pipe coils are fed with water at temperatures varying from 80° to about 110°, by vertical risers that run up the building columns. These riser mains are actually embedded in the brick column casings so that exposed pipe work is kept to a minimum. The riser mains in turn are fed by horizontal mains in the basement which run from the boiler rooms, and are keyed to each system.

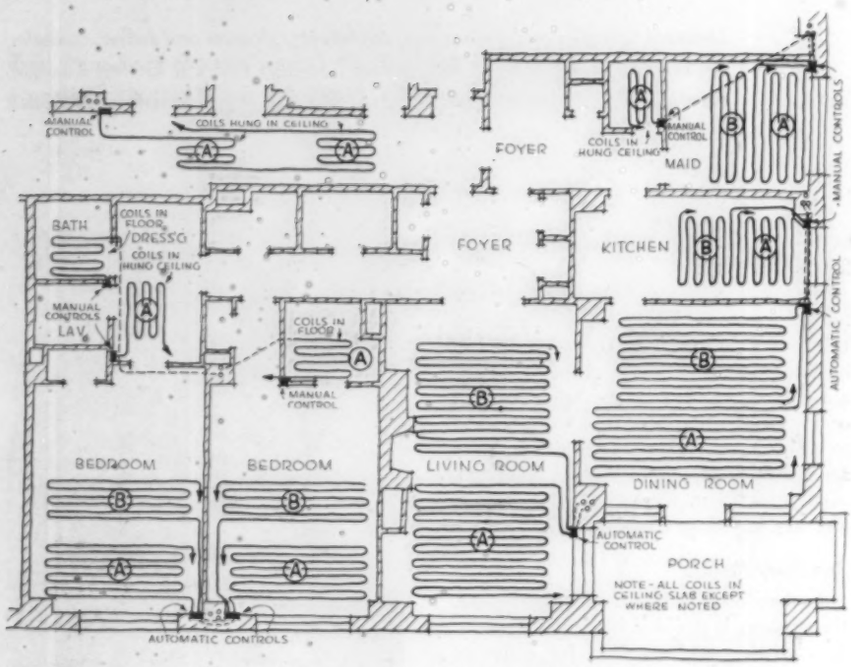
Auxiliary Panels

As can be seen from the panel plan, the system is divided into two circuits, A and B, each supplied by different risers. The panels in Circuit A follow roughly the periphery of the building and are concentrated near windows to offset "cold radiation," an important factor in this building with its large window areas. These panels operate

William B. McClurg Photo

(Right, Above) Panel-heated apartment house in New York, owners, 15 East 91st Street Corp., a subsidiary of City Investing Co. (Below) Detail of ceiling pipe coils. Pipe is placed within 1 in. of bottom of cast slab. Riser mains are embedded in brick column casings. "B" panels operate only when temperature falls below 35°


TRUSSES AT 39" TO 48" CTRS
LONG SPAN BAY
RETURNS RISE AWAY FROM COILS
COILS LAID DIRECTLY ON REINFORCEMENT IN SHORT SPAN BAYS
SHORT SPAN BAY
COIL CONNS AROUND TRUSS ENDS
RETURNS TO AUTOMATIC VALVES IN WALL BOXES (AS SHOWN BELOW)
FLOWS TO COILS IN WALL THICKNESS
HEATING COILS LAID LEVEL (REINFORCING NOT SHOWN)
FLOWS TO COILS FROM WALL BOX BELOW
2 FLOW MAINS } CAST IN
1 RETURN } COL. CASING
REGULATING TEES ON FLOWS TO COILS
AUTOMATIC VALVE ON RETURN FROM COIL IN SLAB BELOW
TEES AND VALVE IN FLUSH-MOUNTED METAL WALL BOX
CONNECTIONS TO MAINS
TYPICAL ARRANGEMENT OF CAST-IN HEATING COILS AND MAINS
BUILDING WALL



(Above) Typical apartment plan showing arrangement of pipe coils for low-temperature ceiling radiation. Panels are divided into two systems: "A" panels for normal heating, and "B" panels for supplementary heating. (Below) Positioning shop-welded pipe coils within slab form. Connections are field welded; screwed joints occur only at the valves

continuously when outside temperatures fall below 65°.

Circuit B is comprised of coils in interior panels, which serve as an auxiliary system that functions only when outside temperature falls below 35°. The occasional wall coils also operate on the B Circuit.

Controls

Each master room whether living room, dining room, or bedroom, has its own thermostat, and minor rooms have hand valves so that tenants may regulate room heat independently of the main controls.

Automatic control valves are enclosed behind furred column casings with access doors; the manual control valves are fixed in recessed metal wall boxes.

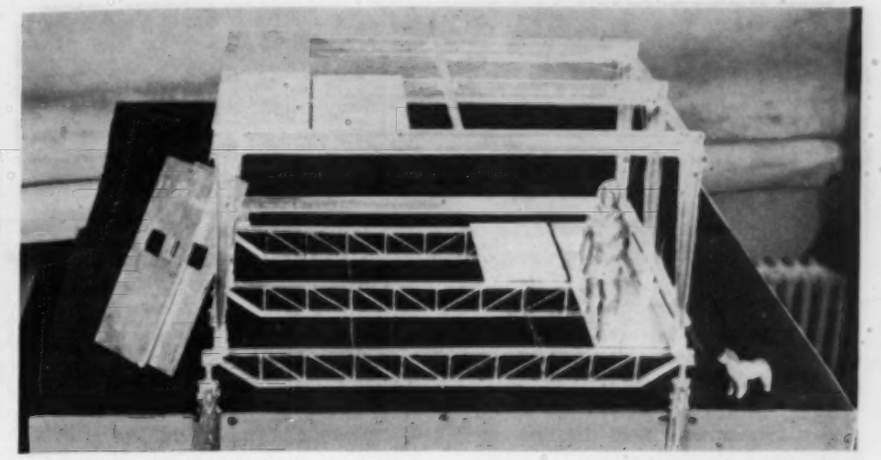
In addition, Minneapolis-Honeywell temperature controls are provided for various zones of the building. Because the panel system utilizes large heating surfaces, water temperature in the coils ordinarily will not much exceed that of blood heat: In Circuit A, it is 80° when outside temperature is 65°, and 110° when outside temperature is 35°; in Circuit B, the water is 80° when outside temperature is 35°, and 110° when outside temperature is 0°. Outdoor thermostats make adjustments for variations in solar heat, and wind velocity and direction. During the period of reduced heat requirements at night, a time-clock control reduces the temperature of the water approximately 10° below that of its normal daytime temperature.

Panel Installation

Installation of the risers kept pace with the erection of the steel work of the structural frame. As the steel columns were being erected, the riser mains were clipped directly to them, care being taken that the required space for fireproofing was preserved between the pipes and the steel work. As soon as the forms for the floor slabs were in place, the shop-welded coils of pipe were laid in place and welded together. The only screwed joints occur at the valves. As soon as the coils were connected, they were tested to 300 lb. per sq. in. hydraulic pressure, and the few leaks in the welds repaired.

At this stage of erection, the branches for future hung ceiling coils were also welded to the riser mains. After the floor slabs were cast and forms had been stripped and main carrier channels for the hung ceilings were in position, the hung ceiling coils were erected, connected, and tested. These hung ceilings actually form a part of the structure of the hung ceiling, the pipe work replacing the small furring channels normally used. The control valve wall boxes are built in as the partitions are erected.

PRODUCTS for Better Building



Basic building units of lightweight demountable shelter developed by U. S. Army

TROOP SHELTER

The U. S. Corps of Engineers is designing a prefabricated troop shelter for the Arctic that offers lessons in simplified construction. Requirements are exacting. All building units must be light enough for transport by plane or glider, and capable of quick erection by unskilled workmen. The units must be adaptable to buildings of different sizes and shapes that can be dismantled and reassembled. The finished buildings must be capable of being heated to 70° F. at an outside temperature of 70° below zero, and buck a 125 m.p.h. gale.

Present plans call for a modular bay measuring 20 ft. by 8 ft. by 9 ft. high, which can be joined to others in any horizontal direction. Basic structural element is a rigid-frame assembly. The floor beam used is an open-web aluminum joist resting on a jack at each end. Supported on insulated footings, the jacks eliminate the need for precise workmanship in the field since they can adjust the level of the floor beams for any terrain.

Other structural elements are the two columns and roof beam which form a bent. Gusset plates are shop-fastened to the columns. In the field, the roof beam will be fastened to the gussets with through bolts.

The interchangeable panels for walls, floors, and roof are of sandwich-type construction with an aluminum facing and insulating core. Those for the floor will be shop-finished with bonded wood surface, ⅛ in. thick; and those for walls and ceiling painted on one side to mask the metallic appearance and introduce some color into the shelter.

FIRESAFE STAIRWAYS

In existing buildings it is sometimes a difficult feat to enclose stairways and wellways as a fire-protective measure; and even in new ones, particularly department stores, the enclosing of moving stairways presents an unusual problem if they are not to be blocked off from the free passage of normal traffic.

Also, some students of fire safety believe that only too often enclosed shafts quickly fill with smoke and superheated gases when doors are opened to admit persons trapped in burning areas.

A means of sealing off open wellways from the spread of fire through use of a combined water spray and ventilating system has been devised by engineers of the Grinnell Fire-Fighting Laboratories, Westinghouse Electric Corporation, and Otis Elevator Company. Guiding principle is "to direct and control the natural forces generated by fire, rather than attempt to oppose them."

In such a system (applicable only to a sprinklered building) outlets for a water spray would be installed completely around the ceiling opening of the wellway. This water curtain would act as a shield against smoke and flames, through which persons could duck to safety. To neutralize the pressure of hot gases which might send the smoke and fumes in gusts through the water spray, air intake slots would be installed completely around the opening inside the water outlets and connected with insulated ducts leading to an exhaust fan in the roof. The water spray would prevent flames from entering the ducts. In addition, an air intake at the top of the wellway would open automatically to provide a downdraft of fresh air to replace hot gases sucked out of the fire area.

If the blaze were of sudden intensity,

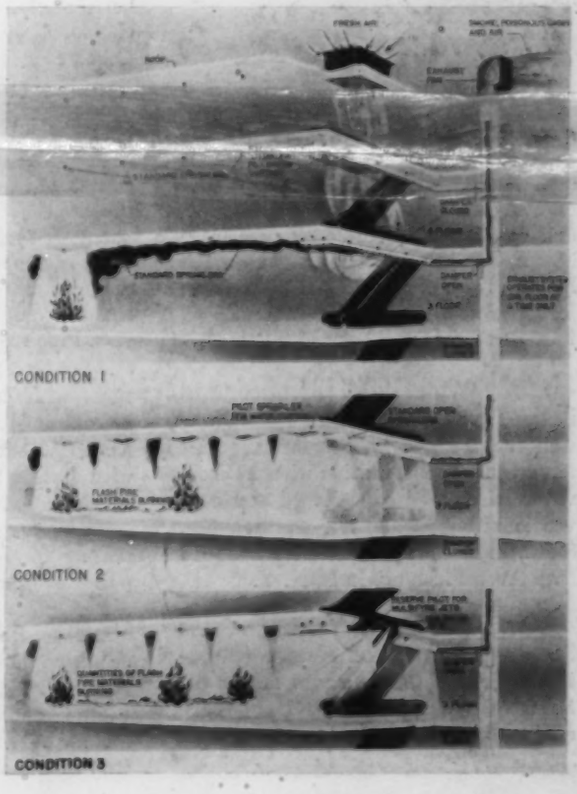
(*Continued on page 142*)

How water-curtain and ventilator system act as fire check in sprinklered building

Condition 1: In a small fire, vents around wellway remove smoke and fumes through roof exhaust; fresh air enters at opening above shaft

Condition 2: If fire spreads, water spray around wellway protects opening without blocking escape

Condition 3: In extra-hazardous areas, flash fire will activate high-velocity jet spray directed down stairway from above



MANUFACTURERS' LITERATURE

BUILDING MATERIALS

Johns-Manville Building Materials. A group of descriptive folders bound together: (1) Built-up Roofs; (2) Sound Control; (3) Transite Movable Asbestos Walls; (4) Ideas for Decorative Floors; and (5) Unit Construction — Walls, Ceilings, Floors. Each gives design and installation information, description of products, specifications, features. 20, 16, 24, 16, and 16 pp., resp., illus. Johns-Manville, 22 E. 40th St., New York 16, N. Y.*

COATINGS

Prufcoat Protective Coatings. New pamphlet describing a metal and masonry paint available in a variety of standard colors. Lists uses such as on concrete floors, structural steel, masonry walls, ventilating systems; gives specifications; and includes full directions for application. 4 pp., illus. Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.*

ELECTRONICS

The Electronic Way. A non-technical explanation of electronics in terms of a hairpin, a window screen and a tin can. How the electronic principle has been applied in home heating controls, industrial controls, aircraft, etc. 8 pp., illus. Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.*

HEATING, VENTILATING

(1) American Exbrook Boiler for Improved Automatic Heating; (2) American Arcoliner Wet Base Oil Boiler. Two circulars describing the latest additions to a heating equipment line: an oil fired unit for small homes (2), and an oil or stoker fired unit for large homes, apartments and commercial buildings (1). 4 pp. ea., illus. American Radiator & Standard Sanitary Corp., P.O. Box 1226, Pittsburgh 30, Penn.*

Crotty Water Wall Furnace and Boiler Amplifier. Full information on a wall furnace and boiler amplifier unit featuring easy installation without excavation, increased capacity in any conventional boiler, and low maintenance. 8 pp., illus. Crotty Mfg. Corp., 133–15 35th Ave., Flushing, L. I., N. Y.

Dravo Counterflo Oil or Gas Burning Direct Fired Heater (Bulletin 516). Bulletin on a new heater designed for industrial and commercial use; outlines in detail the application of stainless steel to combustion chambers used in this unit; diagrams and describes features; gives complete specifications and a capacity and dimension table. 12 pp., illus. Dravo Corp., 300 Penn Ave., Pittsburgh 22, Penn.*

40 Facts About Modern Radiant Heating. Non-technical discussion of radiant heating, intended chiefly for consumer use. Includes description of how radiant heating works, how it compares in cost with other systems, and what the advantages are. Also includes two pages of information on the Smith line of boilers. 12 pp., illus. The H. B. Smith Co., Inc., Westfield, Mass.*

The National Fitters Guide and Heat Loss Calculation Sheet. A simple method of figuring radiation and selecting proper boiler size, based on the method of calculating building heat losses, determining the radiation and selecting the boiler that is recommended by the Institute of Boiler and Radiator Manufacturers. The National Radiator Co., 221 Central Ave., Johnstown, Penn.*

New American Blower Aeropel Home Ventilator. Full description of a built-in wall ventilator for use in the kitchen; has a white plastic grille which may be installed either vertically or horizontally. Installation diagrams included. 4 pp., illus. American Blower Corp., Detroit 32, Mich.*

Rayduct: the Pipe for Radiant Heating. The considerable amount of general information on radiant heating contained in this manual was especially prepared by Raymond Viner Hall, A.I.A. It includes basic information on what radiant heating is and a detailed discussion of the principal features in the design of a radiant heating installation. Pipe requirements and pipe layout systems are given for one-story structures with concrete floor slab on the ground and with wood-joist floors, and for a two-story wood-frame structure with basement. A chapter on general considerations in planning a radiant heating system covers selection and placing of pipe, grading and venting, boiler equipment, installation and fuel costs, effect on structure and finish materials, heat loss and lag, etc. Diagrams and installation plans are supplemented by photos of actual installations. Complete specifications for Rayduct also included. 44 pp., illus. Bethlehem Steel Co., Inc., Bethlehem, Penn.*

Tri-Flex Grilles and Registers. Catalog of a line of 26 standardized sizes of grilles and registers. Description, specifications, sizes and list price of each unit in the line; engineering data; recommended delivery velocities; charts to simplify accurate selection of proper grilles. 20 pp., illus. Tuttle & Bailey, Inc., New Britain, Conn.

INSULATION

Holding Low Temperatures with Better Insulation. Booklet covering how to select insulation and what to look out for; data on forms, properties and application methods; chapter on the principles and significance of vapor-proofing for various types of wall, floor and ceiling construction; graphs on representative thermal conductivities of various mineral wool forms; chart for computation of minimum insulation thicknesses to prevent condensation on cold surfaces in various environments; recommended procedures for vapor-sealing of masonry, wood, block and plastered walls. 24 pp., illus. Industrial Mineral Wool Institute, 441 Lexington Ave., New York 17, N. Y.

LAUNDRIES

Data for Architects and Builders: Laundromat-equipped Planned Laundries for Apartment Houses. Data useful in the planning of laundry centers in new and existing apartment houses and other types of multiple dwellings. Contains tables showing space requirements and hot water, electric and gas loads. 8 pp., illus. Laundry Equipment Dept., Westinghouse Electric Appliance Division, 246 E. 4th St., Mansfield, Ohio.*

LIGHTING

(1) Germicidal Radiation by Silv-A-King (Bulletin 147-G); (2) A New Commercial Unit by Silv-A-King (Bulletin 447 FV). Announcements of two new units in the Silv-A-King line, each giving complete description, suggested applications, specifications and installation data. 4 pp. ea., illus. Bright Light Reflector Co., Bridgeport, Conn.

Now: New MO-4 Multi-Breaker for Smaller Homes. Folder describing and illustrating a new unit offering fuseless circuit breaker protection to smaller homes and providing a branch circuit load center for large installations. 4 pp., illus. Cutler-Hammer, Inc., 439 N. 12th St., Milwaukee 1, Wis.

Westinghouse Lighting Handbook. Revised edition of the Westinghouse pocket-size manual on lighting, considerably expanded and brought up to date. New features include a spectrum in full color, expanded information on distribu-

(*Continued on page 154*)

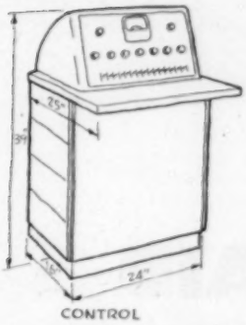
* *Other product information in Sweet's File, 1947.*

CHURCH SOUND SYSTEMS

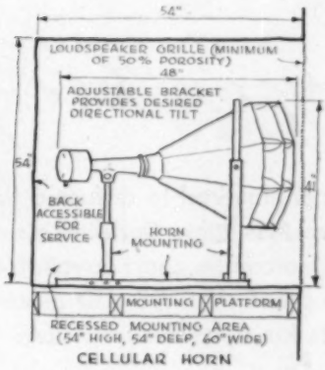
Details supplied by Richard de Haan, Radio Corporation of America

TRANSCRIPTION TURNTABLE

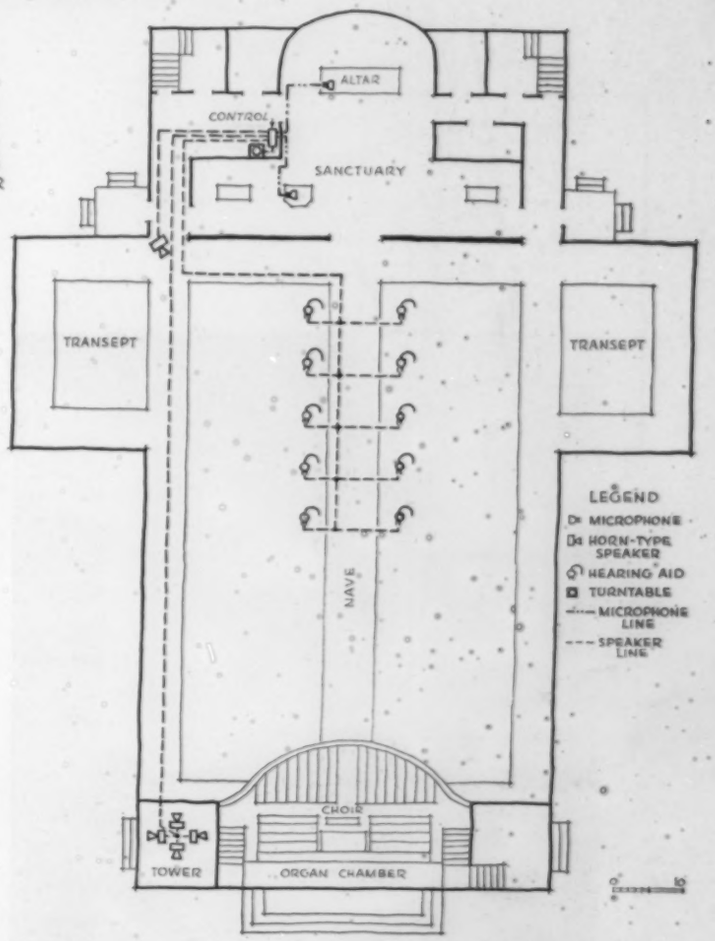
HORN TYPE SPEAKER



CONTROL



CELLULAR HORN

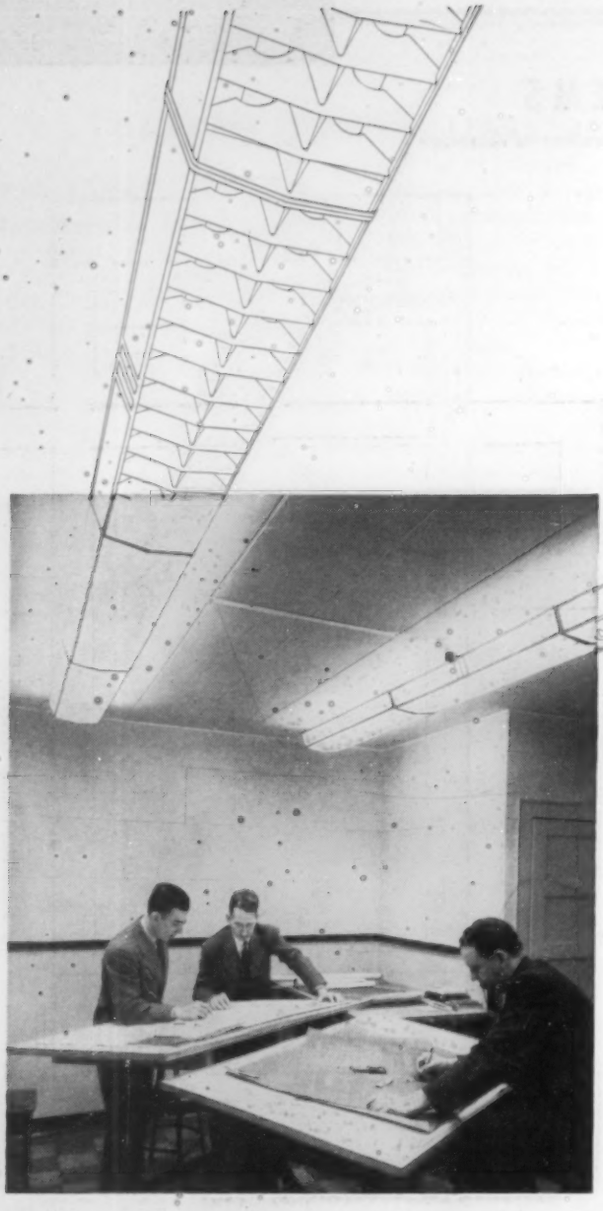


SINGLE CHANNEL SOUND SYSTEM FOR A CHURCH

SPEAKER MOUNTING DATA

Typical Types	Dimensions	Weight	How Mounted	Mounted To
Wall (flush mounted)	15″ x 18″ x 6″	10–15 lb.	In metal receptacle	Crossbar between joist or frame members
Wall (surface mounted)	14″ x 16″ x 10″	7–10 lb.	Wood screws at three points or three angle brackets	Stud or frame member
Horn (for inside installation)	25″ to 60″ long 12″ to 24″ diam.	20–30 lb.	1¼″ pipe thread mounts with 6″ floor flange	Stud, joist, or I-beam
Cellular horn	48″ long 50″ wide 41″ high	130 lb.	Stands on or suspended from adjustable mounting bracket	Joist or platform
Belfry horn (for outside installation)	25″ to 60″ long 12″ to 24″ diam.	20–30 lb.	Minimum 1¼″ mounting bracket with guy wires	I-beam or special towers

(*Continued on page 125*)



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Nationally distributed through leading electrical supply houses.
In Canada: address all inquiries to Amalgamated Electric Corp., Ltd., Toronto 6, Ont.

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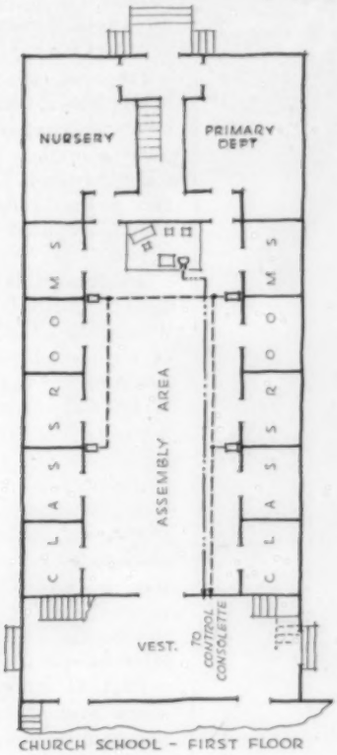
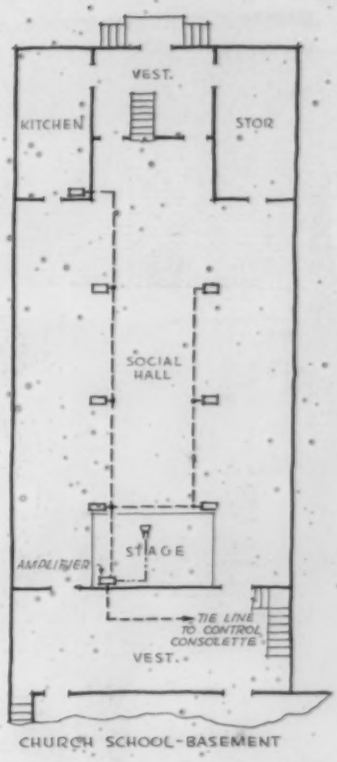
IT'S EASY TO SEE WHEN IT'S
DAY-BRITE *Lighting*

CHURCH SOUND SYSTEMS (*Continued from page 123*)

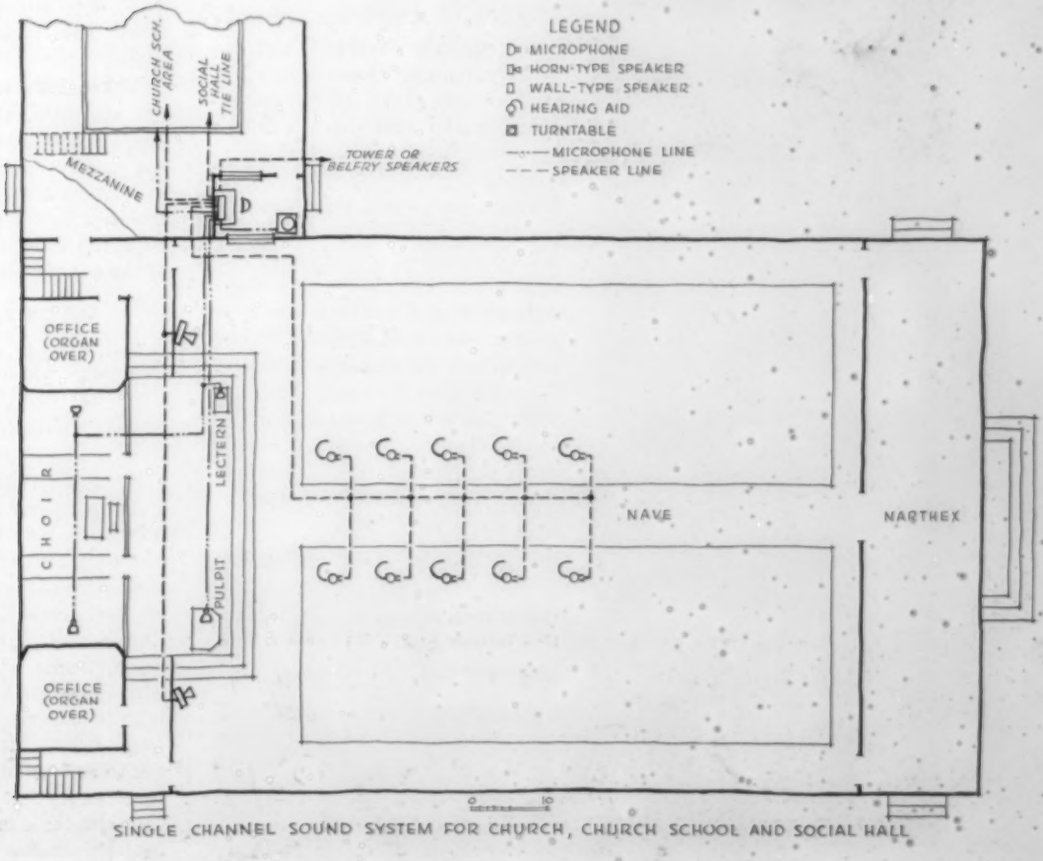
Details supplied by Richard de Haan, Radio Corporation of America



CHURCH SCHOOL - FIRST FLOOR

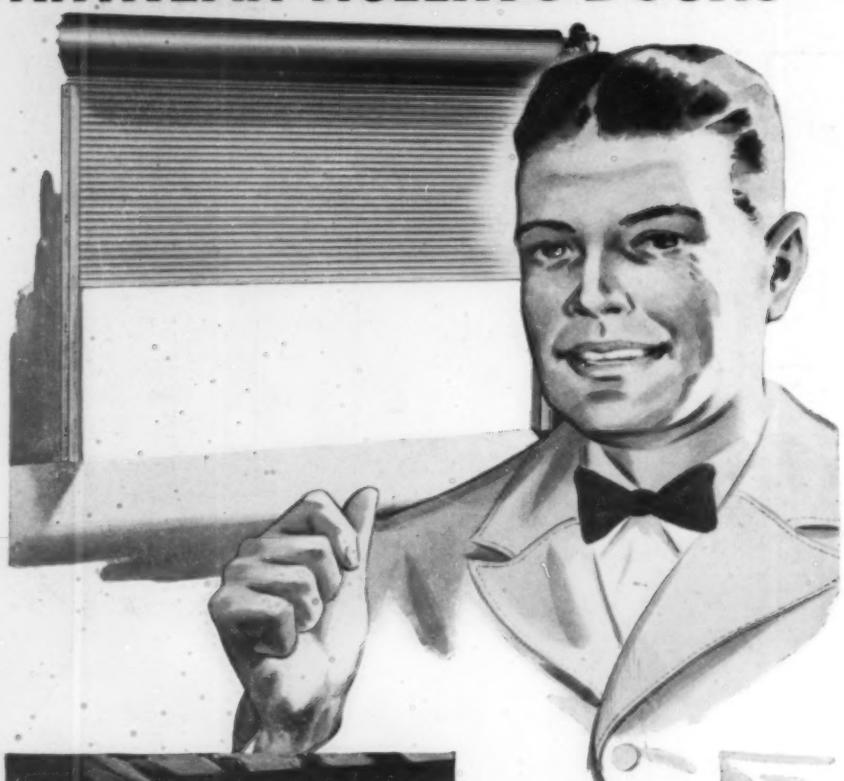


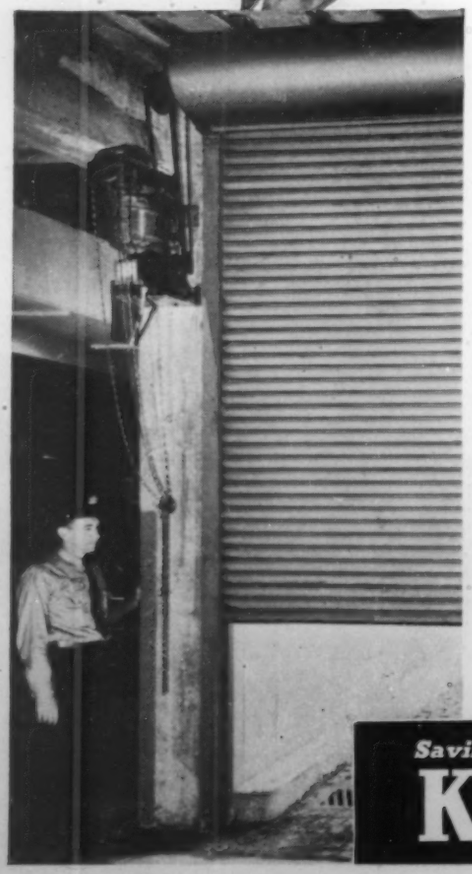
CHURCH SCHOOL-BASEMENT



SINGLE CHANNEL SOUND SYSTEM FOR CHURCH, CHURCH SCHOOL AND SOCIAL HALL

"There's a lot more efficiency around here since we installed those KINNEAR ROLLING DOORS"





BY OPENING *straight upward* and coiling quickly overhead, out of the way, Kinnear Doors boost efficiency in any plant. All surrounding floor and wall space is fully usable at all times. Equipped with Kinnear Motor Operators they provide maximum time-saving convenience (push-button controls can be placed at any number of strategic points). Kinnear's rugged, all-metal curtain assures greater protection against fire, intrusion and the elements. You get the right door for every opening when you select Kinnear Rolling Doors. Each is specially built to meet individual requirements. Any size, for old or new construction. Write for details.

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Saving Ways in Doorways

KINNEAR
ROLLING DOORS

REQUIRED READING

(*Continued from page 30*)

SOUND SYSTEMS

The Architects Manual of Engineered Sound Systems. Camden, N. J., Engineering Products Dept., Radio Corp. of America, 1947. 8½ by 11 in. 288 pp. illus. $5.00.

Prepared especially for the architect and engineer, this volume is intended to be not only reference book, but working guide as well. It is written simply, with technical terms held to a minimum and two pages of definitions of the most commonly used terms offered at the outset.

The manual is divided into two parts, the first of which is devoted to a concise description of the principal components of engineered sound systems and the specifications that should be followed in using and installing the equipment. Separate sections deal with the various parts of the system — microphone, amplifier, loudspeaker, studios and control rooms, acoustics, sound film projector, antenna systems. Each of these sections follows a set outline of presentation, is illustrated with diagrams, and contains architectural and engineering specifications. Much of the data is tabulated for quick reference.

Part II comprises floor plans and sound systems specifications for seven principal building types — schools, hospitals, churches, auditoriums, stores, industrial buildings, hotels. Sound equipment and wiring layouts are superimposed upon typical floor plans in each group.

Although the volume is based throughout on RCA equipment, it contains much specialized technical information not readily obtainable elsewhere and is so written as to be of ready help to the architect in the design of any building requiring engineered sound, regardless of the equipment he is planning to use.

VACATION HOMES

Cabins, Cottages and Summer Homes. By Bernard S. Mason and Frederic H. Kock. New York 18 (67 W. 44th St.), A. S. Barnes and Co., 1947. 8½ by 11 in. 168 pp. illus. $2.75.

For the ambitious layman who wants a summer place and would like to build it himself, here is the book to tell him how to go about it. From selection of site and choice of plan through to installation of the doorbell, the instructions are simple and direct. Included are log, stone, frame and adobe construction, with diagrams to illustrate each. There is a whole section of plans and elevations ranging from the open-front Adirondack leanto and the one-room hunter's cabin to two-story cottages of five or six rooms. One chapter is devoted to fireplaces and heating, another to outdoor grills.

Compare this with piece-by-piece methods so commonly used.

Less handling . . . less time . . . lower cost. Clean, dry construction. And these noncombustible panels provide smooth surfaces on both sides, ready for paint or other finishing material of your choice.

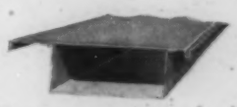
This principle of time saving by construction with large metal sections can be applied to floors, walls, ceilings, and roofs. In fact—to every step from the structural steel to the finished job.

Fenestra Building Panels are suitable for many types of buildings. Their great strength makes them ideal for permanent, lightweight construction... their easy handling also suggests many uses for movable structures or partitions. Fenestra Panels come in a range of types, weights and sizes to meet almost any building need.

You'll find full information in Sweet's Architectural File (Section 3C-1). But why not let us help you apply their benefits to your own particular construction problem? Just call us or mail the coupon.

TYPE C FOR WALLS. Composed of two metal members pressed together, with felt at each side to prevent metal-to-metal contact. Filled with insulation at the factory. Standardized in 3″ depth and 16″ width, in 18 gage painted steel or 16 B&S gage aluminum.

TYPE D FOR FLOORS. Box beam formed by welding together two steel sections. Side laps interlock to form continuous flat surface. Cover plates available for open cells to provide two flat surfaces. Standardized in 16″ width. Depths 1½″ to 9″. Gages 18 to 12.



HOLORIB ROOF DECK. Copper-bearing steel sheets reinforced by three integral triangular ribs on 6″ centers. Provides flat surface for mopped application of insulation and roofing. Sheets 18″ wide, in lengths as required for purlin spacing. Gages 18 and 20 are standard.

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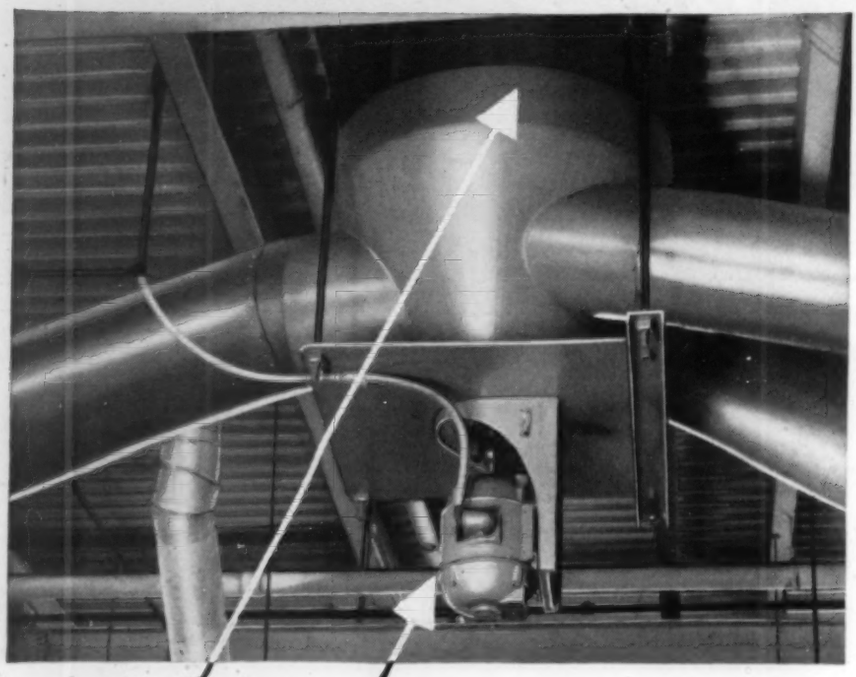

Type CE (extended shaft)

PROPELLAIR FANS EXHAUST FOUL FUMES...

INDUSTRIAL designers know the importance of adequate ventilation . . . for clean working atmosphere . . . happy employees . . . high efficiency . . . *low production costs.* Functionally designed Propellairs give high-volume air movement at low power consumption—permit compact installations, with *space and money savings.*

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Propellair fans are notably effective because they utilize the *airfoil* principle to make *every square inch* of the blade, from tip to hub, an *active working surface*—like an airplane wing. Use Propellairs for high-volume air flow in *all* exhaust and forced air applications. Made for windows, walls, ducts, hoods, roofs, and with pedestals or stands. Write for complete information.

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A single Propellair ventilates an entire heat-treat department at Continental Machines, Inc., Savage, Minn., manufacturers of "Doall" machine tools. *Seven different processing locations,* each individually hooded, are kept clean and safe by this one fan.

PROPELLAIR

DIVISION OF ROBBINS & MYERS • INC.

SPRINGFIELD • OHIO

THE RECORD REPORTS

(*Continued from page 16*)

Safety shall set up alternative provisions covering the use of materials and structural systems in dwellings, which shall then become acceptable throughout the state, despite the possibly differing requirements of local building codes. When the Board of Standards has satisfied itself regarding any new material or construction system, and has brought out its regulations, a local building inspector must issue a permit if the material or construction system to be used complies with these state regulations.

Connecticut Acts

Growing out of recommendations originating during a state-wide planning and zoning clinic held at Hartford in November, 1946, three new enabling acts will strengthen the home rule of the people of Connecticut and make possible more realistic and active community development. The three acts are: (1) the Municipal Planning Act; (2) the Regional Planning Act; and (3) a Zoning Enabling Act.

Highlights of the three are the enabling of any municipality, town, city or borough in the state to create a planning commission; the permitting of contiguous towns with planning commissions to join in the creation of regional planning commissions; and a general clarification of the state's zoning program.

Cleveland's New Code

The preliminary draft of Cleveland's new building code, prepared by Emil J. Szendy, A.I.A., Code Consultant, is approaching completion and public hearings are scheduled to begin in the near future.

A special effort is being made to phrase and arrange the code in such fashion that maximum clarity will result. The code is being drafted to facilitate its use: chapters are included which outline basic requirements for each classification of occupancy, making it possible for the architect or engineer to determine essential requirements for any building without detailed study of the entire code.

NEW CONTEST

American architects and engineers are invited to submit plans for the construction of a Roman Catholic Basilica to be erected in the town of Higuey, Dominican Republic, under the sponsorship of the Dominican government.

The Basilica, to be erected on a large isolated site, free from surrounding buildings, should accommodate 3000

(*Continued on page 130*)

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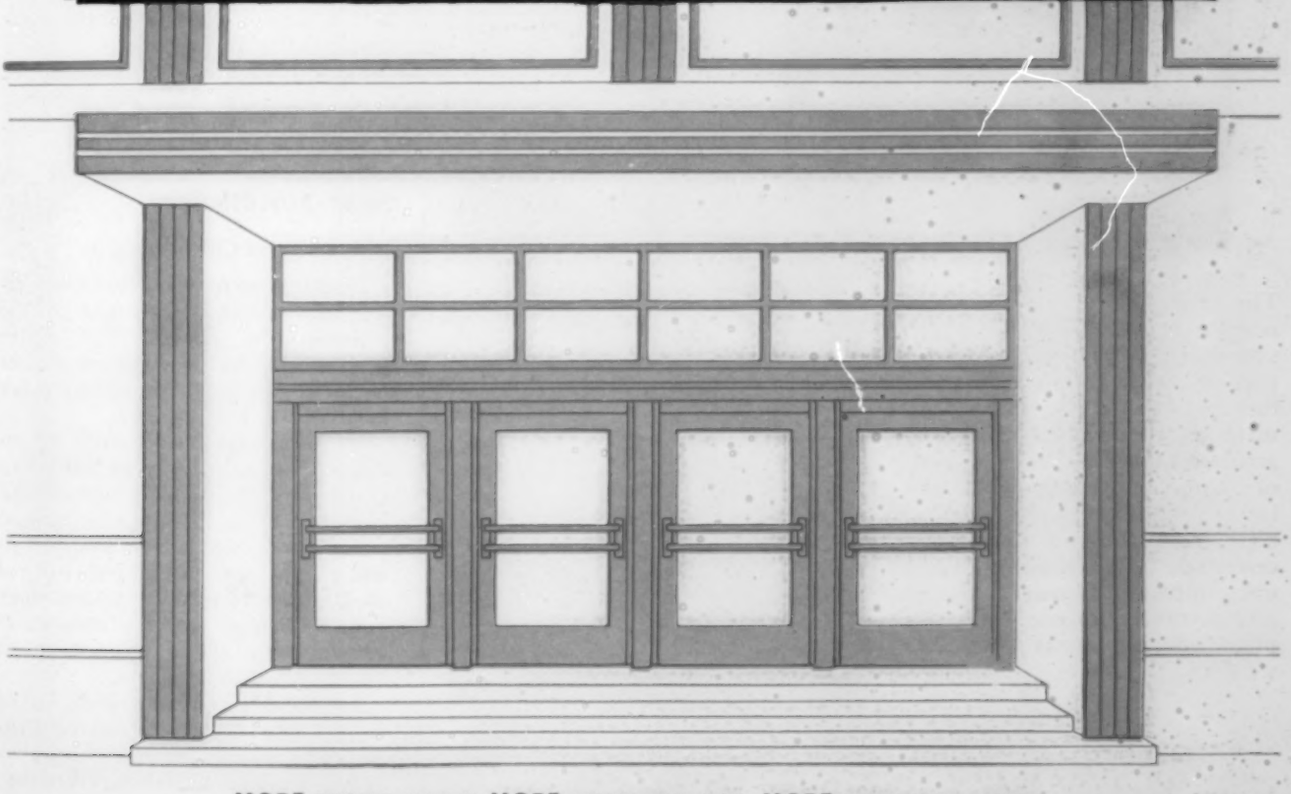

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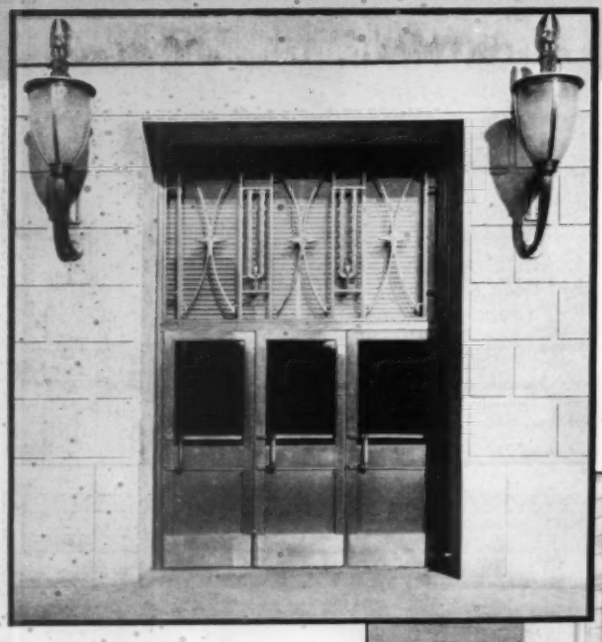

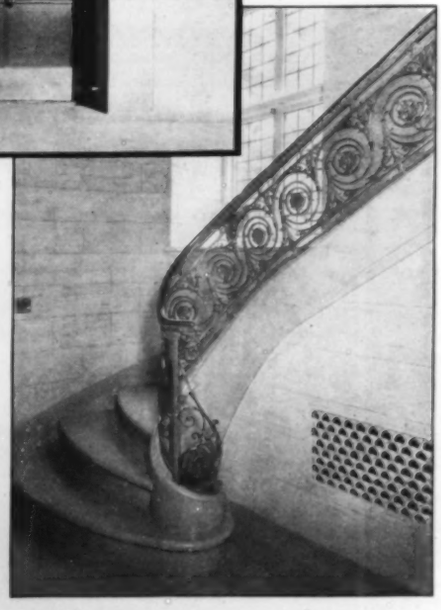

The manufacture of ferrous and nonferrous metal building products has always been a major part of our business. And now that restrictions are lifted, and materials obtainable, we offer to architects and builders a variety of bronze, aluminum and nonferrous metal products. For specific requirements Michaels craftsmen will faithfully reproduce in metal the most intricate architectural designs. If your plans include metal products, write us.

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Member of the National Association of Ornamental Nonferrous Metals Manufacturers

THE RECORD REPORTS

(*Continued from page 128*)

persons. The amount allocated for its construction is $600,000.

All projects submitted will become the property of the Dominican government, which reserves the right to entrust the execution of the project to the winning contestant or to any other person. The contest carries a first prize of $2000 in cash, and closes November 5, 1947. For further information address Julio Ortega Frier, Ambassador, Dominican Embassy, 4500 16th St., N. W., Washington, D. C.

HOME DESIGN PROGRAM

Good Housekeeping Magazine invites qualified architects in the United States to submit recent examples of their residential work for publication in a new editorial series of "Homes America Wants."

The sum of $500 will be paid the architect for each house submitted and published. At least one house is to be shown each month in a continuing program to encourage better residential architecture. Full credit will be given the architect in the publication.

For full details address Joseph B. Mason, Director, The Building Forum, *Good Housekeeping Magazine*, 57th St. at 8th Ave., New York 19, N. Y.

NEW BUILDINGS

University of Chicago

Construction of a $1,250,000 ion accelerator building, first unit in the University of Chicago's $10 million program for basic scientific research in nucleonics and third peg in its postwar building, was begun in July.

The laboratory is primarily for researches in nuclear physics and radiochemistry conducted by the Institute for Nuclear Studies. Facilities for medical research with high energy positive ions and gamma rays will be included and used by the Institute of Radiobiology and Biophysics and the division of roentgenology of the department of medicine in their programs.

The building, modern in style, will be 205 by 104 ft., of reinforced concrete construction with stone and brick masonry walls. The center will feature a crane bay the full length of the building, 50 ft. wide and 33 ft. above the floor. The crane will be capable of handling 70 tons. The upper part of this bay on the first floor level will be surrounded by a balcony on which offices, laboratories, switchgear and capacitor rooms will be located.

Architects for the project are Schmidt, Garden and Erikson.

(*Continued on page 132*)

It's Logical

1. **Acoustical Ceilings are built with standard size units.**
2. **Agitair Type R's are the only standard size diffusers especially designed for Acoustical Ceilings.**
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Agitair Type R is the only air diffuser especially designed for Acoustical Tile, Perforated Steel, and Glass Brick ceilings. It's so easy to install . . . blends so perfectly . . . so attractive . . . so economical.

And you get all the advantages of Diffusion Pattern Control—exclusive patented construction permitting Agitair Type R's to be assembled into numerous patterns which divide the air and distribute it noiselessly in one, two, three, or four directions in proportion to the area served.

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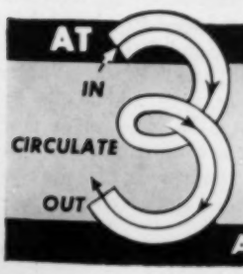

KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST

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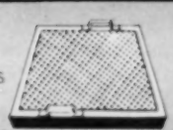

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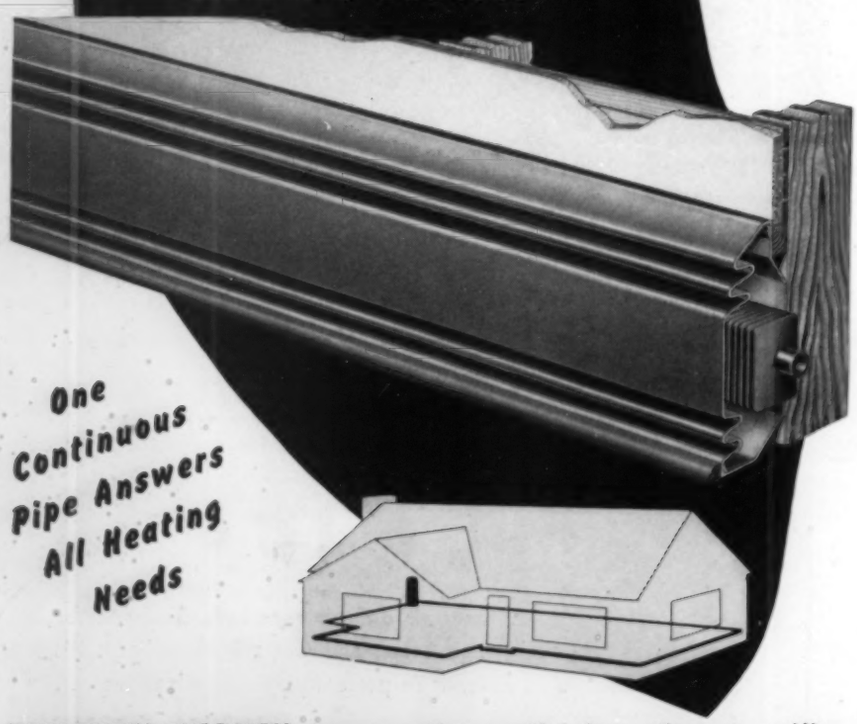

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Heating sections (fin radiation), replacing parts of the piping in the attractive baseboard, with concealed louvres, provide clean, comfortable warmth to the room.

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THE RECORD REPORTS

(*Continued from page 130*)

Housing Project

Working drawings for Farragut Houses, a New York City Housing Authority permanent low-rent project, are approaching completion and are being studied by the Authority prior to final approval.

The development, which will accommodate 1400 families, will be located in Brooklyn on a site bounded by York, Concord, Navy and Bridge Streets. The 10 buildings called for by the plans will embody a five-point ground plan intended to make for economy in operation as well as original cost and to make possible maximum use, within statutory limitations, of facilities such as stairways and elevators. All buildings will be 14 stories high and will include craft and social rooms. Every apartment will have three exposures.

Architectural plans for the project are being drawn by Alfred Fellheimer, Steward Wagner and Carl A. Vollmer. Other phases of the planning are being handled by Fred N. Severud, structural engineering consultant; Paul Wunderlich, mechanical engineering consultant; and A. Carl Stelling Associates, landscape architects and site planners.

MATERIALS REPORT

May production of the 19 construction materials included in the Composite Index Series declined 0.4 points, or 0.3 per cent, from the April level, the Construction Division, Department of Commerce, has announced.

While this decline may appear insignificant, CD points out that normally May production of construction materials is higher than that for April. For example, production in May, 1946 was 7.3 points higher than in April, a gain of 6 per cent. However, the general level of production reported for May, 1947 was 7.7 per cent higher than that for May of last year.

Output of gypsum board and lath, recently reported to be in short supply by the Office of the Housing Expediter as a result of declines in paper liner inventory, continued to increase in May. Production of clay sewer pipe, which had been declining steadily during the early part of this year, also recorded an increase. Other items recording increases were lumber, hardwood flooring, brick, rigid steel conduit and fittings.

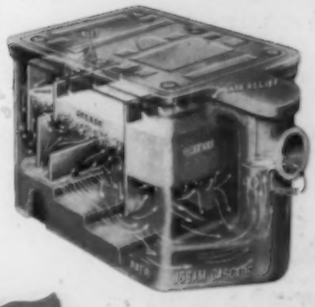
Two important items in the index — cement and wire nails and staples — registered substantial declines in production in May as compared with April. The decline in the output of nails was anticipated following the end of premium payments.

(*Continued on page 134*)

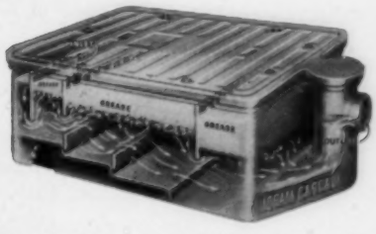
WHEN THE PROBLEM IS GREASE

THE ANSWER IS Josam CASCADE GREASE INTERCEPTORS

GREASE in waste water eventually means trouble for the plumbing system. In homes, restaurants, hospitals, hotels, and schools where GREASE is a by-product of cooking... in industrial plants, rendering plants, and packing houses where GREASE is a by-product of manufacturing, this GREASE is a costly hazard. JOSAM GREASE INTERCEPTORS eliminate this hazard completely. There is a type and size for every purpose ...so, for complete protection against GREASE problems, rely on a JOSAM GREASE INTERCEPTOR! Send for free copy of the authority on GREASE INTERCEPTION, JOSAM MANUAL "A".



Series "J" Grease Interceptor. All cast iron for Domestic and Commercial Service, capacity up to 40 GPM; for installation on floor or recessed in floor.



Series "JL" Grease Interceptor. All cast iron for Dishwasher Service, capacities to 30 GPM; for installation on floor or recessed in floor.

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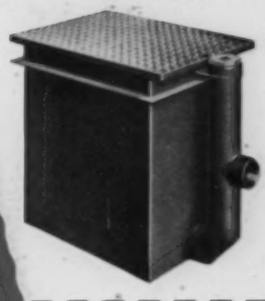
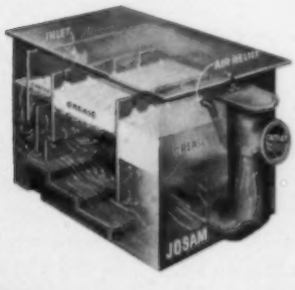


Series "JP" and "JR" Grease Interceptor. All steel for Commercial and Industrial Service, capacity up to 150 GPM; for installation recessed in floor.



Series "JN" Grease Interceptor. All steel for Commercial and Industrial Service, capacity up to 150 GPM; for installation on floor.

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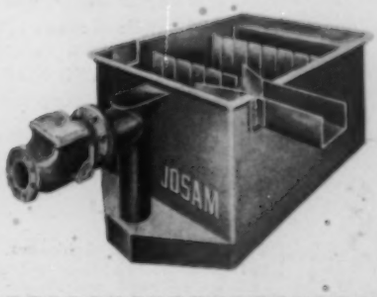

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OFFICE NOTES

Offices Opened, Reopened

Joseph M. Barrow, Architect, has announced the opening of an office at 713 W. Illinois St., Urbana, Ill.

A. L. Klingbeil has opened an office for the practice of architecture in the Pullen Bldg., 399 N. E. 79th St., Miami, Fla.

Lloyd B. Knutsen, Architect, has resumed the practice of architecture at 527 Hoeschler Bldg., La Crosse, Wis. Mr. Knutsen formerly was a partner in the firm of Knutsen and Brunet, Architects.

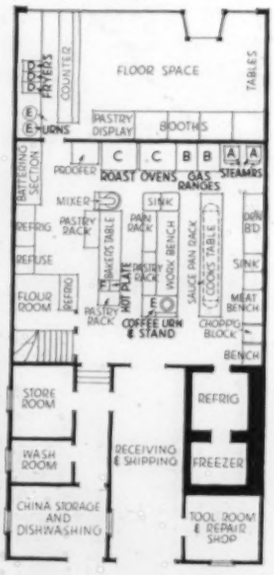
Roy M. Schoenbrod, Architect and Engineer, has opened an office for the general practice of architecture at 8 S. Dearborn St., Chicago 3, Ill.

Chloethiel Woodard Smith, A.I.A. has resumed his architectural practice with offices at 814 17th St., N.W., Washington 6, D. C.

KITCHEN PLAN NO. 43: Forty-third of a series of successful mass-feeding operations.

This cleverly designed kitchen serves a multitude of Chicken Roost customers in Providence, Rhode Island

KEEP FOR HANDY REFERENCE!



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Designed by Albert Kandarian, Prop. Chicken Roost
Installed by the Murray Company, Providence, Rhode Island

To serve thousands of chickens, chicken pies, pastry, pies, rolls and biscuits daily not alone in his popular restaurants, but also "over-the-counter" and through a unique "delivered-ready-to-eat" service, Mr. Kandarian designed this modern, "Specialized Cooking Tool" commissary kitchen, an important functioning part of which are two versatile Blodgett No. 952 Gas-Fired Ovens, with four 42" x 32" x 12" separately controlled compartments.

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New Addresses

The following new addresses have been announced:

Harry L. Alper, Architect, 565 Fifth Ave., Suite 1011, New York City.

Martin L Beck, A.I.A., 10 Nassau St., Princeton, N. J.

Norman M. Giller, Architect, 1575 Washington Ave., Miami Beach 39, Fla.

Leopold Hauf, Jr., A.I.A., 101 Walsh Rd., Lansdowne, Penn.

Page & Steele, Architects, 72 St. Clair Ave. W., Toronto, Canada.

Robinson, Keefe & Devane, Architects (John J. Robinson, R. C. Keefe, P. J. Robinson, and A. D. Devane), No. 22, Lower Baggot St., Dublin, Ireland.

Rupert Construction Co., 3400 Lancaster Ave., Wilmington, Del.

Firm Changes

The firm of George Farkas Interiors, Inc., has changed its name to George Farkas, Incorporated. The address remains the same: 954 41st St., Miami Beach, Fla.

W. W. Meyers and R. A. Krider, Registered Architects, and F. D. Ellenberger, Registered Engineer, have announced their association for the practice of architecture under the firm name of Meyers & Krider, Architects, with offices at 407 Commerce Bldg., Erie, Penn.

O'Hara, Hedlander and Edson, Architects (Charles E. O'Hara, R. Lincoln Hedlander, Stuart F. Edson and Andre Halasz), have announced that Eli Constantine has become a member of the firm.

Noah N. Sherman, Architect, has announced the dissolving of the firm of Sherman & Zamshnick, Architects, as of July 1st. Mr. Sherman is continuing his architectural practice at the same address, 62 William St., New York City.

APPOINTMENTS

Arthur F. Deam, Professor of Design, has been appointed Chairman of the Department of Architecture of the University of Pennsylvania. In charge of design at the University of Illinois from 1930 to 1945, Professor Deam has been at Pennsylvania for the past two years. He is patron of the T Square Club Atelier of Philadelphia.

Recent additions to the staff of the School of Architecture and Allied Arts at the University of Oregon include Professors Marion Dean Ross and Theodore O. Reyhner. Mr. Ross will assume charge in the course of History of Architecture on both graduate and undergraduate levels. Mr. Reyhner will be an associate in the Structural Design curriculum.

Edward Steichen has been appointed Director of the Department of Photography of the Museum of Modern Art, New York City.

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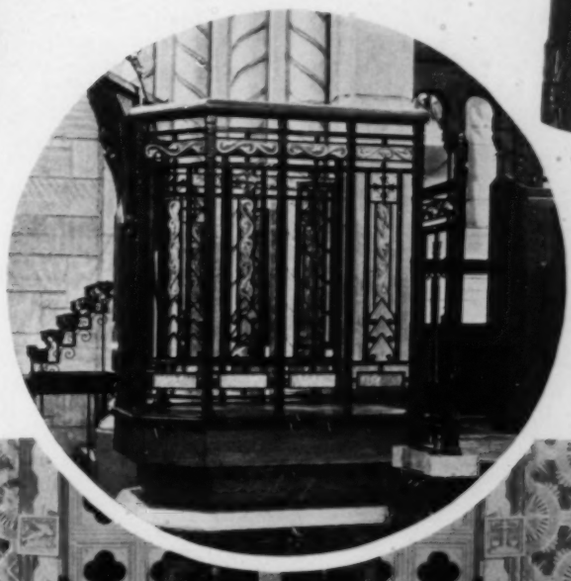

Composite view of a complete Bernardini installation at St. Cecilia's Church, Pawtucket, R. I., Reverend Mathias A. Hebert

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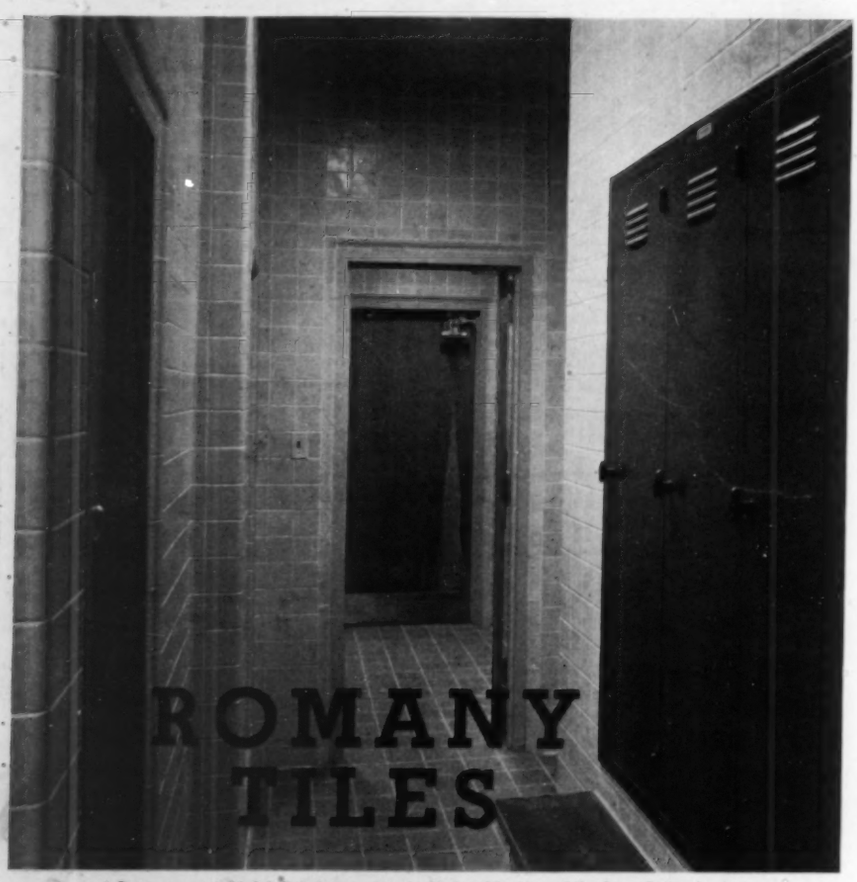
LIGHTING FIXTURES · PULPITS—IN MARBLE, WOOD, BRONZE

HOUSING AND THE 80th CONGRESS (*Continued from page 80*)

numerous bills introduced in both houses, and ranging from across-the-board rental increases to the maintenance of the status quo on residential rents. Title II of the Act as finally passed terminated federal rent control over hotels, motor courts and tourist homes serving transient guests, housing completed on or after February 1, 1947, and housing which was not rented at any time between February 1, 1945 and January 31, 1947. It continues through February 29, 1948 rent control over housing in defense rental areas.

The law also permits rent increases not exceeding 15 per cent of maximum rent prevailing on June 30, provided such increases are incorporated in valid written leases, to take effect after July 1, 1947 and before December 31, 1947 and to expire on December 31, 1948 or later. The law decontrols, after December 31, 1947, all units involved in such voluntary leases.



A Passageway, in V. & I. D. Laboratory, in the National Institute of Health at Bethesda, Md.

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In April, the President abolished as of June 1 the Office of Temporary Controls, Office of Price Administration, Civilian Production Administration and the Office of War Manpower and Reconversion. The latter three had been absorbed into the OTC for gradual liquidation late in 1946. In May, the rent control functions of OPA were shifted to the Office of the Housing Expediter, to which building controls of the CPA had previously been assigned.

Reorganization Plan No. 3

For more than a year, President Truman had shown great concern over the possible fate of the National Housing Agency, which was set up early in 1942 to coordinate the federal government's numerous agencies concerned with war housing. Under the law, the agency would have been dissolved within six months of the legal termination of World War II. The 79th Congress had failed to approve the housing reorganization powers the President sought.

On May 27 the President resubmitted to Congress, with modifications, Reorganization Plan No. 3. Under the parliamentary procedure of submission, the plan required rejection by both Houses of Congress within 60 days or it automatically would become law.

On June 18, following rejection of the plan by the House Committee on Expenditures in the Executive Departments, the House of Representatives voted unanimously to kill it. Two weeks later, the Senate Banking Committee, by a 7 to 6 vote, approved it. On July 22, the Senate voted to approve it 47 to 38, with Senator Taft, the Republican leader, in a complete reversal of his stand the year before, fighting alongside Senator Barkley, the Democratic leader, for approval of the President's plan. It therefore became law.

Reorganization Plan No. 3 sets up the Housing and Home Finance Agency, and replaces the wartime National Housing Agency. Under the new organization, there is one administrator who "shall be responsible for the general supervision and coordination of the functions of the (three) constituent agencies," namely: (1) The Federal Home Loan Bank Board administering the Federal Savings and Loan Insurance Corporation, the Home Owners' Loan Corporation and the Federal Home Loan Bank system; (2) the Federal Housing Administration with the same functions as prescribed under the National Housing Act of 1934; and (3) the Public Housing Administration, taking over the functions of the United States Housing Authority and "certain remaining housing activities (Defense Homes Corporation) pending the completion of their liquidation."

(*Continued on page 138*)

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HOUSING AND THE 80th CONGRESS (*Continued from page 136*)

Reorganization Plan No. 3 also established the National Housing Council to assist the HAHFA Administrator. The functions of the Council are of a general, coordinating nature. The Council consists of the HAHFA Administrator, the Chairman of the Reconstruction Finance Corporation, three members of the Federal Home Loan Bank Board, the Commissioners of the Federal Housing Administration, and the Secretary of Agriculture.

Investigations of the Building Industry

Two Congressional investigations of the housing and building industry were authorized by the 80th Congress.

The first (the McCarthy-Wolcott resolution) authorized the appointment of a 14-member joint investigating committee of the House and Senate Banking and Currency Committees, comprised of seven members from each House. The committee's report to Congress is to be submitted by March 15, 1948, and will cover the following specific fields:

The extent of the need for housing in the United States; the extent, if any, to which shortages in building materials are contributing to the housing shortage; reasons for the existing high costs of building materials and housing, and action which may be taken to reduce these costs; all factors (of whatever kind and nature) which contribute to existing high costs of housing and which prevent speedy construction of adequate housing to meet the nation's needs, and the action which may be taken to eliminate such factors; the extent to which archaic building codes contribute to the existing shortage and excessive cost of housing; the operation of existing federal legislation in the field of housing; the operation of government housing agencies; the availability of private capital and government loans to finance housing, and other problems the committee deems significant.

The second investigation, authorized by House Resolution No. 3 of February 26, 1947, has already been undertaken by a sub-committee of the House Committee on Education and Labor under the chairmanship of Representative Ralph W. Gwinn, a Republican, of New York.

This investigation is being directed to uncover data on monopoly and restrictive practices affecting the building industry, including municipal laws, licenses or regulations that curb building activity. The subcommittee is inquiring into material and labor costs and questionable practices relating to the economics of construction generally, and especially of small homes and rental property for moderate income groups.

The FPHA Investigation

The Federal Public Housing Authority was criticized in a report prepared by investigators for the Government Corporation Subcommittee of the House Appropriations Committee, and revealed in part by committee members in April.

Some of the charges were: That the disposition of permanent war housing was a deliberate failure, that FPHA sought to perpetuate itself by transferring the public housing projects to mutual ownership which would require federal supervision; that the temporary veterans' housing program was a failure marked by careless planning and exorbitant administrative costs.

This report of FPHA was followed a few weeks later by another adverse report of the General Accounting Office which found the accounting of the public housing authority to be "inadequate, inaccurate and otherwise deficient for the fiscal year 1945 and prior years." The Director of the General Accounting Office declared that the condition of FPHA accounts "is such as to render

(*Continued on page 140*)

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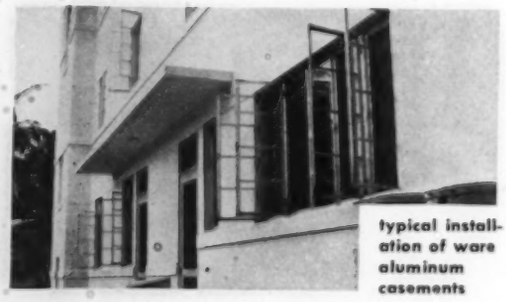
windows



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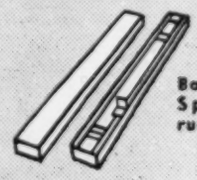

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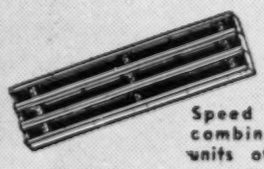
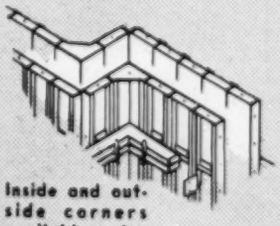
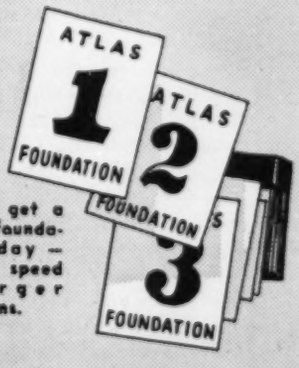
Ingenious quick-action wedge bolt, for rapid joining or disassembly.



Speed panels combine into units of three or more for quick handling.



Inside and outside corners available, also special panels.



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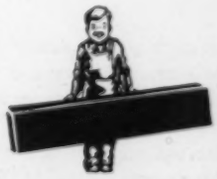

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HOUSING AND THE 80th CONGRESS (*Continued from page 138*)

them inauditable or make the auditing of them inordinately costly."

The House Appropriations Committee in June received a report from Subcommittee Chairman Jensen. Investigators found that more than 31 per cent of all public housing is occupied by persons whose incomes are higher than the maximum set or are otherwise ineligible; that the provision of the United States Housing Act calling for the elimination of one slum dwelling unit for every dwelling unit built by the government has been "almost completely ignored"; that 36 per cent of FPHA employees received salaries in excess of $4500, a proportion higher than that in any other government agency.

After the adjournment of Congress, it was announced by Representative Walter C. Ploeser, a Republican, of Missouri, that an investigation of charges of maladministration of the Federal Public Housing Authority would be made during the Congressional recess by the House Expenditures Committee in Executive Offices, which was voted funds to continue its investigation of the use of Treasury funds for government publicity and the circulation of propaganda.

The Taft-Ellender-Wagner Bill

Early in March, the Senate received for the third time in less than two years a comprehensive housing bill. Officially known as the National Housing Commission Bill, the new version was familiarly called the Taft-Ellender-Wagner bill, and differed very little from the previous version known as the Wagner-Ellender-Taft bill, and which failed to pass in the 79th Congress. The companion bill was introduced in the House by Representative Jacob K. Javits, a Republican, of New York at the time the Senate received the T-E-W bill.

The Senate Committee on Banking and Currency, to which the bill was referred, approved it by a 7 to 6 vote on April 23. The Committee's 50-page report issued on April 24 declared that the bill was "imperatively necessary," but the Senate as a whole apparently disagreed for it was never brought to the floor. The bill died in the House Banking and Currency Committee.

The Taft-Hartley Act

The Labor Management Relations Act of 1947, passed over the President's veto late in June, and applicable to interstate commerce, may or may not have appreciable effect on the construction industry.

Under the National Labor Relations Act of 1935, which is amended by the Labor Management Relations Act of 1947, the building industry generally was not recognized as being importantly affected by its provisions.

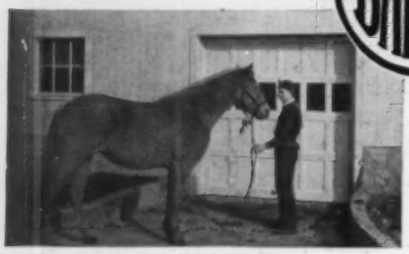
There is, however, some possibility that the new and enlarged National Labor Relations Board may broaden the field with new interpretations and that some of the bill's broader provisions, such as the outlawing of the closed shop, the ban on jurisdictional strikes and secondary boycotts may in the future be held applicable to the construction industry.

An attorney for one building trades employers' association summed up the general attitude of the industry in these words: "Only time will tell to what extent and in what manner the new law will affect building work. The industry is very complex, and while building site workers are engaged in a local industry, intrastate and not interstate, actions which may affect interstate commerce or the flow of materials in commerce can arise on a local building site. Only the courts can decide these complicated questions and that may take years."

A beautiful residence garage using two sizes of *standard* Barcol OVERdoors.

A *standard* Barcol OVERdoor in an ice-manufacturing plant storeroom.

BARCOL



This modernized horse barn employs *standard* Barcol OVERdoors for space and heat saving.

Small manufacturing plants, service garages, and the like have *standard* Barcol OVERdoors.

Standard Barcol OVERdoors

SOLVE LOTS OF PROBLEMS —IN LOTS OF PLACES...

***Only the* Barcol OVERdoor**

HAS ALL OF THESE FEATURES

1. ROLLER-CRANK CLOSING ACTION.
2. SELF-LATCHING BOLTS.
3. TWIN-TORSION TAILORED SPRINGS.
4. CONTINUOUS VERTICAL TRACK BRACKETS.

Sturdy construction, readily adaptable design, and ease of operation make the *standard* Barcol OVERdoor useful for many other applications in addition to its regular use on residence garages. A few of these are suggested in the pictures above. Remember — consider a *standard* Barcol OVERdoor whenever you have an unusual or difficult door problem that needs solving. *Consult your Barcol representative.*

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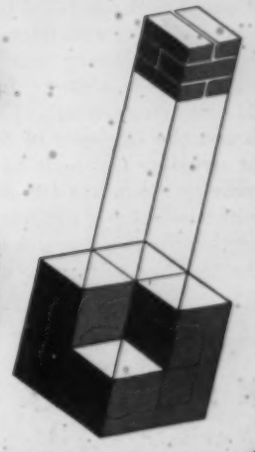

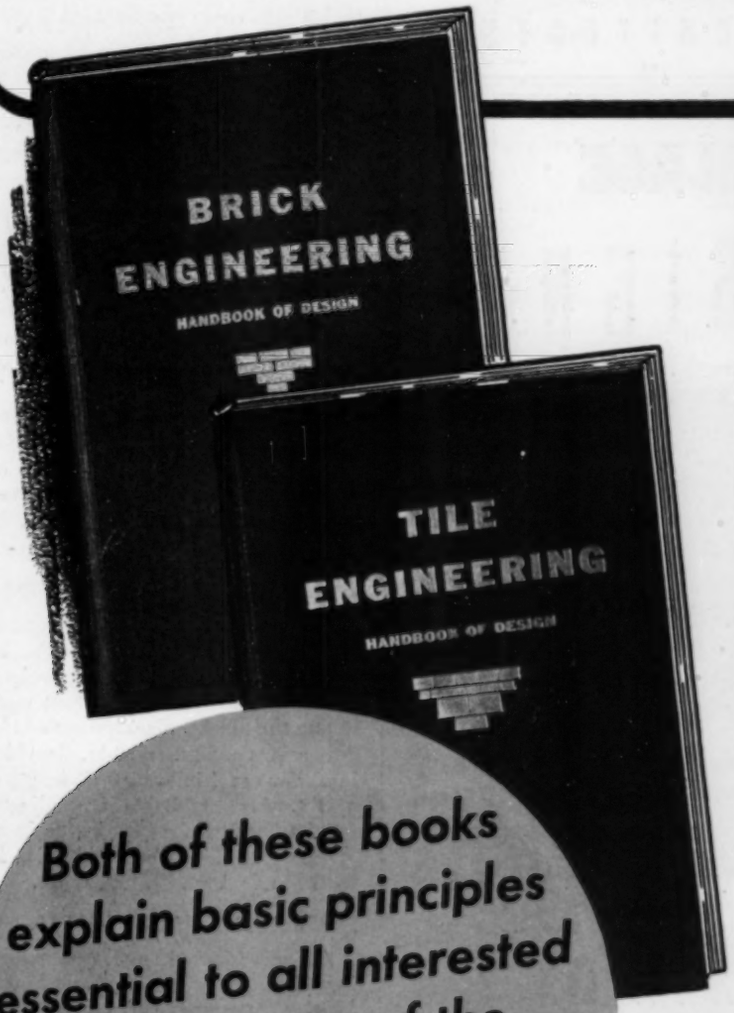

Both of these books explain basic principles essential to all interested in the design of the ENGINEERED HOUSE or larger construction $2.50 each

The Engineered Housing Program is made possible by modular coordination. The first complete industry to accept the idea of modular dimensions for building materials sizes was the Brick and Tile Industry.

These two books—"Tile Engineering" and "Brick Engineering" are basic handbooks for modular coordination—the new scheme of design. They are essential to all who employ modular coordination in their work . . . for the smallest dwelling to the largest building.

Each book has over 400 pages of helpful information. Included are brick and tile masonry, footings, foundations, floors, walls, gardens, R-B-M columns and piers, moisture control, estimating tables, standard specifications and many other details. Each is well printed and bound—well illustrated.

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ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 119*)

such as in a flash fire, and the previously mentioned safeguards failed to block the passage of smoke and flames into the wellway, high-velocity water jets directed down the wellway from above would come into action.

To test the efficiency of the system, a test structure was built on the Grinnell proving grounds: a two-story building with a mock-up of a moving stairway connecting the two floors. A fire started on the first floor, of burning alcohol and smoke bombs, quickly drove observers from the area but failed to pierce the spray curtain about the wellway. Observers on the floor above reported that the air was fresh and unaffected.

FIRE-PROTECTIVE PAINT

A new paint, *Albi-"R"*, is said not only to be non-inflammable but also an actual retardant to the spread of fire. When flame is applied to a surface coated with it, the paint breaks out into a rash of small and large blisters which puff out to form a blanket of protective insulation between flames and the surface underneath. This factor prevents flash fires and greatly retards the spread of flames. It is listed by Underwriters' Laboratories, Inc., and carries the approval of the New York City Board of Standards and Appeals for application on wood, fiber board, acoustical board and other combustible materials. The paint was developed in the laboratories of Harvard University by Dr. Grinnel Jones and Dr. Walter Juda under a program initiated by the manufacturer: Albi Chemical Corp., 9 Park Pl., New York, N. Y.

Under blowtorch, special paint puffs out to form protective blanket of insulation

GLASS-BLOCK VENTILATORS

Window ventilator units, especially designed for glass block walls, have frames of extruded aluminum which are set in the same mortar as that used in laying the blocks. Sizes are scaled to the dimensions of 6-in. and 8-in. glass blocks in various multiples of their length and height. Also available are adjustable ventilating fans for installation in glass block walls. Winco Ventilator Co., Inc., 6063 Maple Ave., St. Louis, Mo.

EMERGENCY LIGHTING

A means of providing emergency lighting within buildings is offered by *Exide lighting battery systems*, made in a wide range of sizes from a small portable type with lamp attached to those of large capacities which will operate key lighting throughout a large building. Emergency lighting safeguards are needed in many types of buildings: hospitals, hotels, and places of public assembly — for obvious reasons — and also in many industrial plants where lighting failure might mean interruption of important industrial processes or present a hazard to workmen. The emergency systems operate as follows: When normal power

(*Continued on page 144*)

IMPLEMENT OF ARCHITECTURE

Schlage lock trim offers a flexibility that ranges from stately, conservative locks to modern, contemporary designs. Knobs can be placed *anywhere* on the door. There is a Schlage design to effectively complement any scheme of decoration or architecture. For information on specific lock trim, see your builders' hardware man, or write direct to Schlage Lock Company, P. O. Box 3324, San Francisco.

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ORIGINATORS OF THE CYLINDRICAL LOCK

Welded Construction Simplifies Face-Lifting Operation

By WILLIAM B. MILLER, C. E.,
Consulting Engineer for Walker & Weeks, Architects, Cleveland, Ohio

INTERESTING problems in the integration of structural iron work in two adjacent buildings were encountered in a remodeling job on the Williamson and Otis Buildings in Cleveland.

It was desired to extend a bank's quarters from the Williamson Building into the Otis Building, but this was complicated by the fact that the front of the Otis Building projected 4 inches over the building line. It was necessary to set back this front and apply a new front of terra cotta and granite to both buildings so that the architectural design would carry through.

The front of the Otis Building, being wall bearing, was supported at the second floor line by a box Warren type truss. In order to set the front back it was necessary to slice this truss in half in a longitudinal direction. The architectural design was so worked out that a girder beam could be erected below this truss and masonry walls carried up to support existing walls.

The first step was to install temporary shoring to carry the load of existing walls during alterations. Fig. 1 shows the welding of temporary needle beams to the bottom flange of the old truss. Welding was used to avoid any possible movement in the needle beams. Next, tubular struts were arc welded into the old truss at frequent intervals so that underpinning loads could be carried directly through the truss into the masonry wall above. Fig. 1 shows two of these tubular struts directly behind a gusset plate at a web intersection of the old truss.

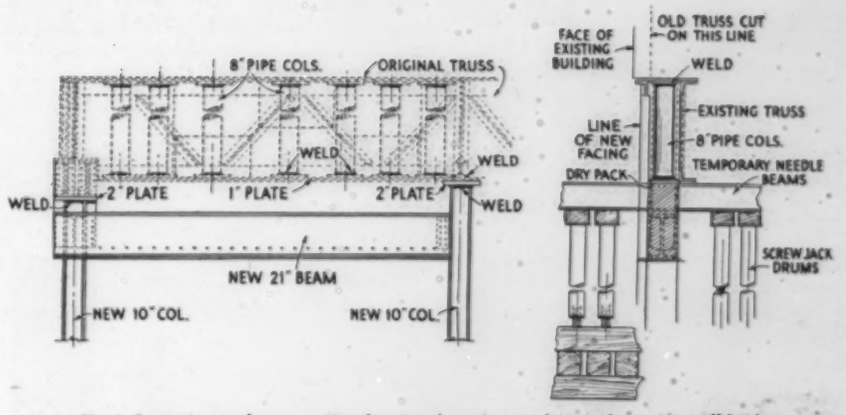

Fig. 2. Front view and cross-section showing alterations made in order to set wall back.

Fig. 2, a general sketch, shows the new 21-inch I-beam erected on new columns beneath the old truss to assume the wall-bearing load and support new masonry. Cross-section shows the tubular struts and the lines of the old and new facing. A masonry wall was then installed from the top of this beam and dry packed to the underside of the truss. The truss was then cut longitudinally and filled in with masonry between the tubular struts to complete the job. After building loads were properly transferred to new 21" beam (located below old truss), the shoring drums were removed and needle beams flame cut to clear new masonry.

The original columns of the Williamson Building, erected in the 1890's, were made by combining four Z-bars with exterior plates and interior lacing. Some of this lacing was strengthened during this remodeling with arc welding. To connect new beams into this type of column it was necessary to weld new plates between existing lacing of this column. At other points brackets were welded as shown in Fig. 3.

Fig. 1. Welding bottom of truss to needle beams acting as temporary support.

Fig. 3. Brackets from 21-inch I-beam are welded to existing column.

The above is published by LINCOLN ELECTRIC in the interests of progress.
Structural Design Studies are available free to engineers and architects. Write The Lincoln Electric Company, Dept. 264, Cleveland 1, Ohio.

(*Continued from page 142*)

supply is interrupted, a switch in the emergency circuit immediately cuts in the emergency lighting batteries. After normal lighting has been restored, the emergency batteries are automatically recharged at a high rate, and are maintained thereafter by a small "trickle" charge. Only maintenance required is said to be the addition of water to battery cells two or three times a year. The Electric Storage Battery Co., Philadelphia 32, Penn.

HANGERS FOR SPRINKLERS

Automatic stud welding is announced as an improved method for fastening hanger connections for sprinkler systems to steel frame structures. The only opening that must be drilled or chipped in ceiling finish is one large enough to admit the insertion of the stud and ferrule, which eliminates the necessity for chipping out large openings to accommodate beam clamps. Nelson Stud Welding Corp., Lorain, Ohio.

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. . . the many advantages of Amtico Rubber Tile. Designed to meet their exacting specifications, Amtico Rubber Tile is the ideal flooring for public and private buildings, where long-lasting beauty and silence are a primary consideration.

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Thirteen beautiful, marbleized colors make possible many interesting floor designs, and our greatly increased capacity assures prompt delivery. Write for illustrated folder and samples.

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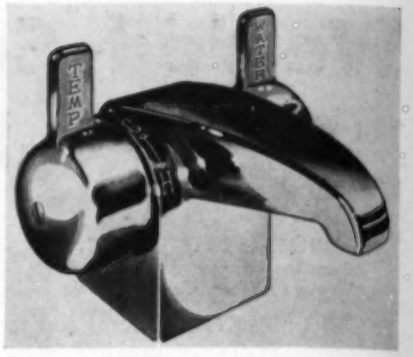

Lavatory faucet has dual controls governing water temperature and volume

SELECTOR FAUCET

A newly announced faucet for lavatories features dual controls for water volume and temperature. After the amount of water has been selected by one lever, a turn of the other varies its temperature from cold to hot. The faucet is made in both domestic and commercial models. Cole Valve Co., 212 Lonsdale Bldg., Duluth 2, Minn.

DIRECTED LIGHTING

Direct-A-Beam, an adjustable housing for PAR 30 or R40 spot or floor lamps, is especially designed for the high-intensity lighting of displays, merchandise, murals, desks, or office machines. Direction of light can be adjusted by a finger touch or window stick, since the lamp in its recessed housing rotates a full 360° horizontally and tilts downward within 90°. Concentric louvers can be applied to the lens, and color filters in red, blue, green, or amber. McPhilben Mfg. Co., Inc., 102 Wooster St., New York 12, N. Y.

NEW FLUORESCENT SHAPE

A new semi-circular fluorescent lamp, known as *Circlarc*, widens the range of fluorescent lighting, for which only straight and circular lamps were heretofore available. The lamp is an 18-watt tube curved to form a half circle 12 in. in diam. Two can be joined to form a complete circle of light. Rated life (at 3 hours burning per start) is 2500 hours. Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30, Penn.

SLIMLINE LAMPS

The operating range of *Slimlines*, small-diameter fluorescent tubes ranging up to 8 ft. in length, has been extended to 300 milliamperes. This increased current range is said to give more light per foot, with no change in rated lamp life, and increase the lamp's usefulness for industrial and commercial lighting. The higher rating will require special ballasts. Lamp Dept., General Electric Co., Nela Park, Cleveland 12.

(*Continued on page 146*)

Thousands of tests, under all kinds of service conditions, prove that "Dutch Boy" Red Lead gives metal extra protection

4 Ways RED LEAD RESISTS EFFECTS OF WATER

...guards against Rust

Maintenance engineers have long recognized Red Lead as the "standard" metal protective paint. This acceptance is based, to a great extent, on its marked ability to stand up against moisture, a powerful factor in the rusting process.

Now, scientific research into the inherent properties of the pigment itself, shows just how and why Red Lead resists the effects of water. Briefly, there are four reasons:

1. Red Lead resists water "pick-up"—If a series of various metal protective paint films are weighed and then submerged in water (salt or fresh), it is readily noticed, on reweighing after several days immersion, that Red Lead films have outstanding resistance to the absorption, or "pick-up," of water.

Testing Water Permeability of Paint Films—*With this standard apparatus a measure of the amount of water that passes through a unit of film is obtained.*

Experiments show that a straight linseed oil film allows three times as much water to pass through the film as when the same film is pigmented with Red Lead.

2. Red Lead resists passage of moisture—Rusting of metal will not take place if water does not penetrate the paint film to reach the metal. Water permeability tests of paint films (see illustration at lower left) show, beyond question, that Red Lead is one of the most effective metal protective pigments, because of its stubborn resistance to the passage of moisture through the film.

3. Red Lead resists solution by water—The action of water on paint films results in a partial dissolving of the film. Many metal protective films lose a considerable percentage by weight of their films through solution in water. On the other hand, the solubility losses of Red Lead paint films are practically negligible.

4. Red Lead resists distortion by water—Red Lead films have little tendency to shrivel or change in size during immersion in water. This is imperative to good metal protection. For good protection depends on good adhesion, and a paint film maintains better adhesion when it is not distorted by the action of the water.

Remember, too, Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including many of the fast-drying resin types.

Specify RED LEAD for ALL Metal Protective Paints

The rust-resistant properties of Red Lead are so pronounced that it improves any metal protective paint. So, no matter what price you pay, you'll get a better paint if it contains Red Lead.

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The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division).

DUTCH BOY
Reg. U. S. Pat. Off.
RED LEAD

(*Continued from page 144*)

DRAFTING TEMPLATE

A transparent plastic template, known as *Architect's Aid No. 29*, is designed to provide a quick and neat delineation of commonly used architectural symbols. Cut-outs in the plastic give linear outlines of household fixtures, squares, circles, and points for pitch, slope, rise and run; all at the scale of ¼ in. equals 1 ft. A 7-in. scale is at one edge. Rapidesign, Inc., Dept. AR, P.O. Box 592, Glendale, Calif.

AIR CLEANER

The *Raytheon Home Precipitator* is designed to operate in conjunction with an air-conditioning or warm-air heating system, removing dust particles from the air by electronic precipitation. As the airborne particles pass through an electronic field within the Precipitator, they become positively charged and adhere to collector plates. At infrequent intervals these plates can be flushed clean by a spray of water operated by a valve that forms part of the unit. U. S. Bureau of Standards tests are reported to show an air-cleaning efficiency of 85 to 90 per cent for this electrical method, as compared with only 10 to 20 per cent for mechanical filters. The unit measures 54 in. high, 28 in. wide, and 27 in. deep, and is attached directly to the air intake of the furnace or air-conditioning unit. It has a rating of 1200 cu. ft. of air per minute. Power consumption is quoted as 50 watts per hour. Raytheon Mfg. Co., Waltham, Mass.

Air cleaner for home use removes dust particles by electronic attraction

FROZEN-FOOD CABINETS FOR STORES

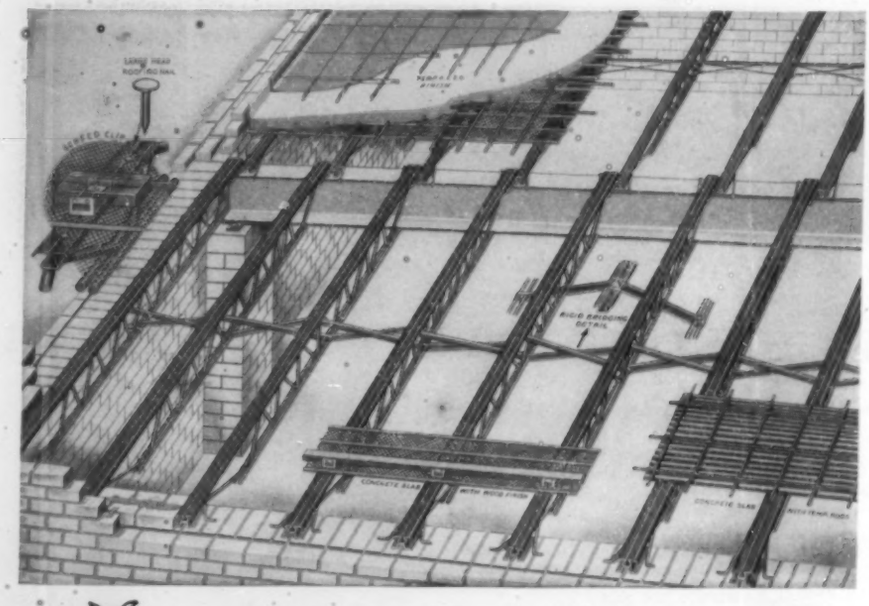
Designed to increase the flexibility of frozen-food services in grocery stores, a new line of *Frigid-Freeze cabinets* are mounted on wheels. These "spot-special" cabinets, for tying in frozen-food sales with related food products, have a 20 cu. ft. capacity and will hold about 250 lb. of frozen food or about 20 dozen packaged items. Refrigeration Corp. of America, Div. of Noma Electric Corp., 55 West 13th St., New York 11, N. Y.

OIL FURNACE

A new "pint-size" oil furnace, measuring only 2 ft. by 4 ft. by 5 ft., is designed to heat a 4- to 7-room house. Large heating capacity is attributed to the design of flue gas and air circulating passages. Complete heating unit is mounted above the blower so that heat is scrubbed from its bottom as well as sides. Heating capacity can be increased in order to heat additional rooms by substituting another nozzle in the pressure-atomizing gun-type burner. The furnace is equipped with Minneapolis-Honeywell controls, room thermostat, automatic draft stabilizer, and oil filter; also, an air filter and automatic humidifier. Kalamazoo Stove & Furnace Co., Rochester Ave., Kalamazoo, Mich.

(*Continued on page 148*)

MACOMBER
V TYPE
BAR JOISTS



Here's the original Macomber Bar Joist with the improved top chord that provides secure nailing for flooring materials. The structural convenience of the open web is maintained. The improved top chord holds nails in a vise-like grip. Result: Universal Application. Sizes are determined from standard Steel Joist Institute Load Tables. Catalog upon request.

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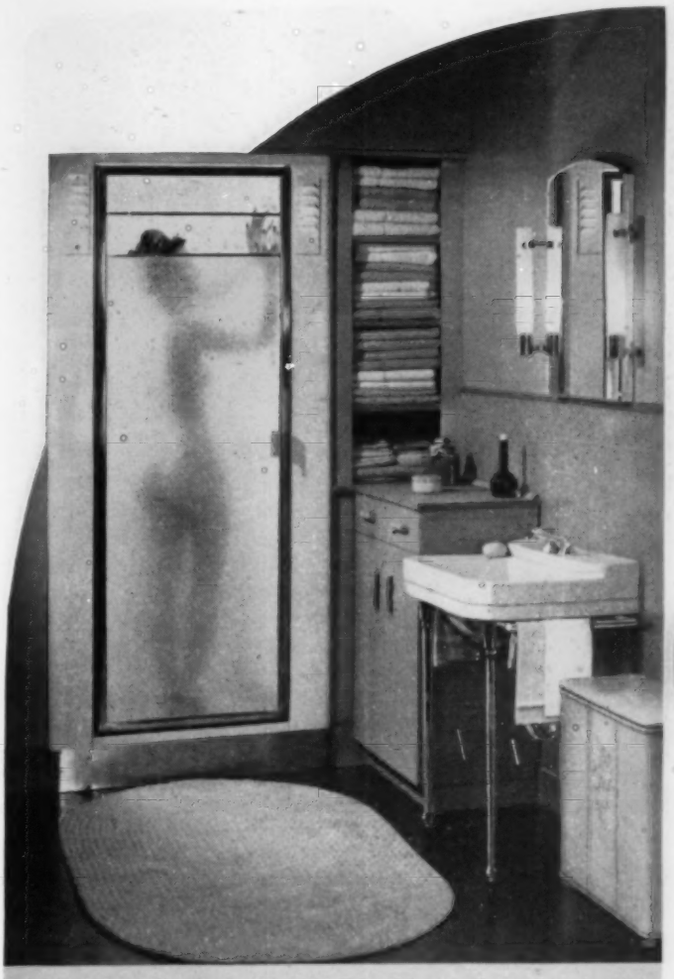
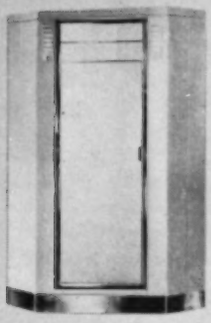


A model for every building need

TILETONE'S complete line of MODERN DESIGN SHOWER CABINETS

Your jobs will be completed on time—and in time—when you specify Tiletone shower cabinets. For Tiletone has three styles available right now. If a built-in installation is desired—Tiletone has a de luxe cabinet combining streamlined beauty with genuine utility. Perhaps a basement installation gets the call—Tiletone utility cabinet is the answer. Or for the new modern corner installation—Tiletone offers something strikingly different. So, for new homes or old, a second bathroom, or basement installation, for office buildings, clubs, apartments or hotels, Tiletone has the models you can recommend with confidence.



MODEL 75

Sizes: 32" x 32" x 80", 36" x 36" x 80" and 40" x 40" x 80" Corner.

Terrazzo receptor • White enameled aluminum cabinet Interior lights • Anodized aluminum glass doors • Adjustable shower head • Dial type mixing valve.

MODEL 45

Size 32" x 32" x 76"

Porcelain enameled receptor • Aluminum panels finished in white enamel • Shower curtain • Shower head • Dual shower valves.

MODEL 55

Sizes: 32" x 32" x 80", 36" x 36" x 80" and 40" x 40" x 80" corner.

Terrazzo or porcelain enameled receptor • White enameled aluminum cabinet • Shower curtains • Shower head • Dual shower valves.

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WHY SPECIFY SHOWER CABINETS?

1. A new pre-sold market . . . big demand.
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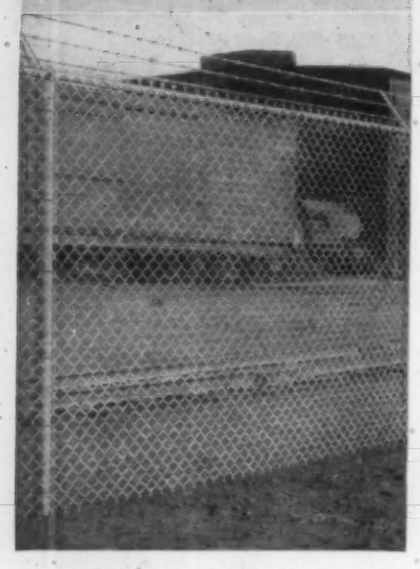

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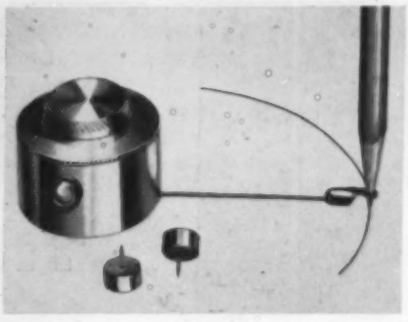
Anchor Fence
Nation-wide Sales and Erecting Service

(*Continued from page 146*)



Compass draws circles, ellipses, spirals

COMPASS

Circles from 2 in. to 12 in. in diam. can be made with the vest-pocket *Flex-A-Beam compass*. According to the announcement, it may also be used to draw ellipses and spirals. The compass consists of a stretch-proof linen line in an aluminum encased reel. Three push-pins serve as center points, and a releasing button controls the length of line. Stewart-Jackson Instrument Co., Dept. AR, 815 Yale Ave., Los Angeles.

MODULAR DESIGN SCALES

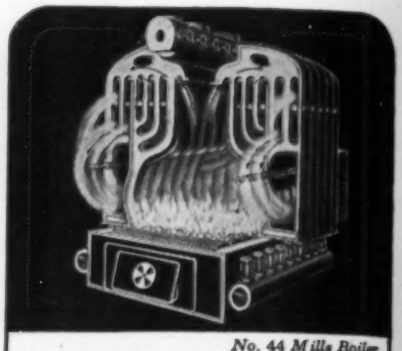
Palmer Time-Saver Scales are designed as a short-cut in the design of brick, structural tile, and concrete block work using the 4-in. module. The scales are of two types. The first is in the form of graph paper divided into 4-in. multiples at the usual architectural scales. This paper is printed in tablet form for "on the job" sketches and quick calculations, or in larger size sheets for tracings. On the latter, horizontal and vertical notations in the margin show both the number of 4-in. modules and the complete dimension for the corresponding number of modules (i.e., 1 module = 4 in.; 10 modules = 3 ft. 4 in., etc.).

The second type of scale is designed to help one determine quickly the correct brick-bond for horizontal and vertical layouts for piers, openings, etc., and to simplify the calculation of horizontal and vertical brick, tile, or concrete block courses. The scales again are based on the 4-in. module, which includes mortar joints when used for masonry construction; and are printed at ⅛ in., ¼ in., and ¾ in. to the foot. The Palmer Mfg. Co., 3207 11th St., South, Arlington, Va.

INTERCOM SYSTEM

The *Dictograph Electronic Intercom* is designed to provide complete intercommunication service for small business concerns, small stores, and offices. It features a Master Station which has

(*Continued on page 150*)



No. 44 Mills Boiler

"There's a long, long trail . . ."

The hot flue gases in an H. B. Smith Cast-Iron Boiler rise directly to the highest surface of the boiler, across to each side, to the front through the upper flue passages, then to the back through lower channels, and finally up the chimney. It's really a long, long trail . . . and not a straight one.

Actually, the gases would rather rush directly to the chimney, but the efficient "Mills" design hinders them at every turn. Instead, they're scientifically-directed along paths which give them a chance to scrub against maximum heating surface and give up more heat.

That's the secret of Smith-Mills efficiency. The result is more heat per fuel unit . . . less fuel used . . . lower fuel costs.

It *pays* to specify H. B. Smith boilers for industrial, commercial, institutional and residential jobs. If you want to know more important H. B. Smith advantages, send for your free catalog.

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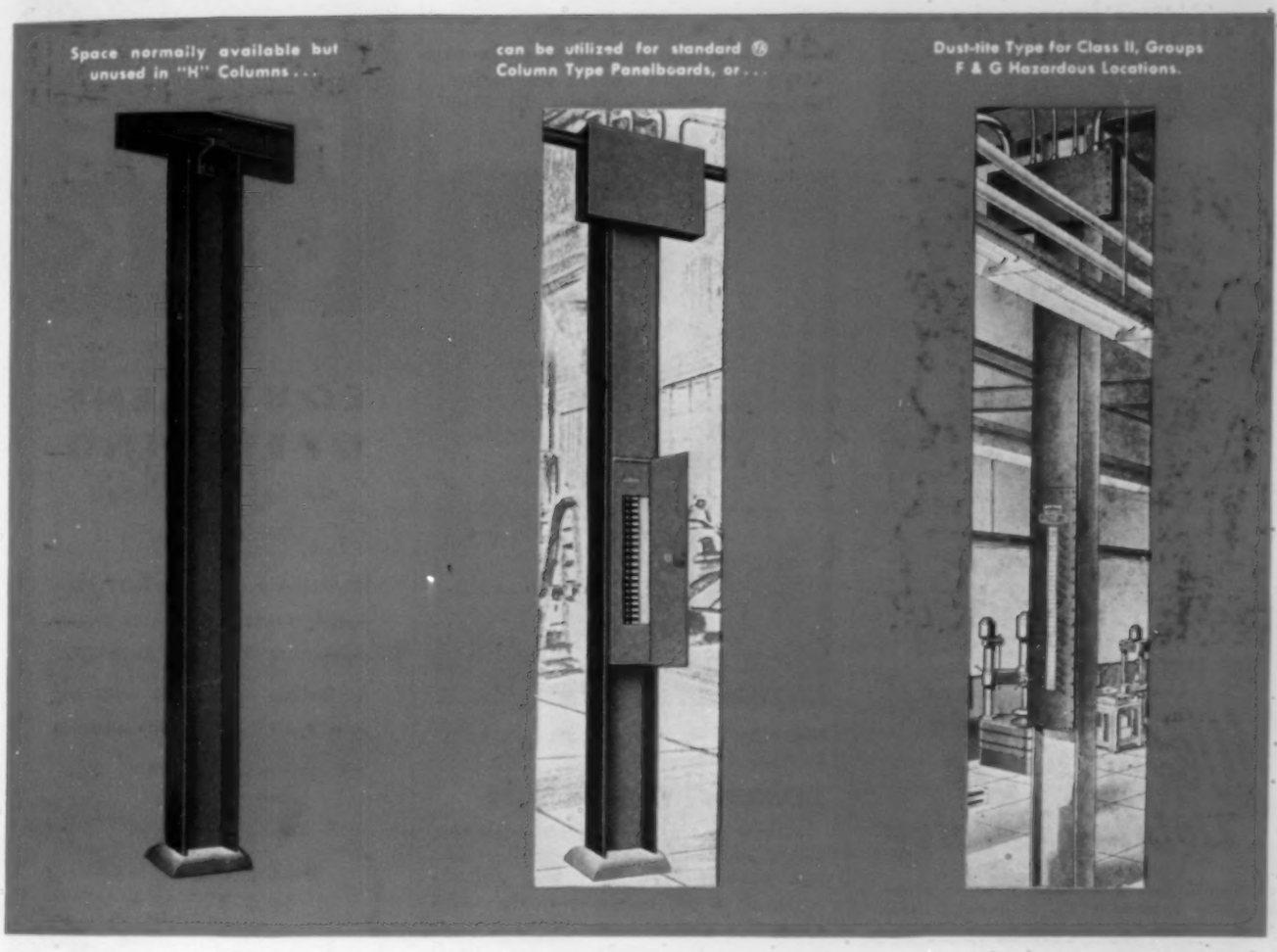
CAST IRON BOILERS
THE H. B. SMITH CO., INC.,
67 Main St., Westfield, Mass.

Offices and Representatives in Principal Cities

Economical . . .

in more ways than one


Space normally available but unused in "H" Columns . . .
can be utilized for standard FA Column Type Panelboards, or . . .
Dust-tite Type for Class II, Groups F & G Hazardous Locations.

FA Column Type Panelboards save wall and aisle space by mounting between flanges of "H" columns, and reduce voltage drop with shorter branch circuit runs by locating in center of area controlled.

Available now, in standard or dust-tite construction with FA Thermag or Dublbrak Circuit Breakers, 4 to 42 branch circuits, 15 to 50 amperes capacity, for 3 or 4 wire mains. Write for Bulletin 301.

FA TRADE MARK

Frank Adam Electric Co.

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Makers of BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHEATER

contractors,
PLANT
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USE THIS NEW
Westinghouse CIF
Lighting Catalog

You'll find it invaluable when planning commercial, industrial and floodlighting installations, and when buying lighting equipment.

Here are some of its helpful features:

- **Quick-find Index** of the most complete line of lighting equipment available.
- **Complete data on each fixture...** illustration, application, dimension diagram, illumination design data, list prices and style numbers.
- **Data Section** for layout and design, including application suggestions, recommended levels of illumination for various types of installations, coefficients of illumination tables, etc.

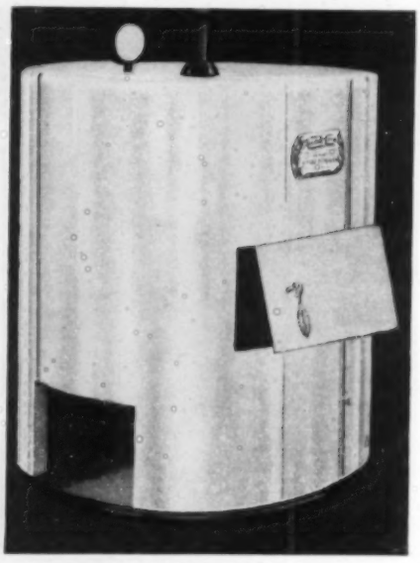
Put your copy of the Westinghouse CIF Catalog to work . . . you'll find it of real help in solving lighting problems. Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa. J-04129

Available through 127 Westinghouse Electric Supply Offices and Independent Distributors

Westinghouse

(*Continued from page 148*)

a 10-call capacity including calls to other Master Stations. Accessories include the Annunciator, which indicates the source of incoming calls originating at substations; and an All-Call Paging Switch which enables the person at the Master Station to use the system for paging. Dictograph Products, Inc., 580 Fifth Ave., New York 19, N. Y.



Hot-water heater is of "tankless" design

TANKLESS WATER HEATER

A new line of all-steel water boilers, called *Automatic Heat*, features a tankless water heating unit that delivers water at a 90° temperature rise, with capacities ranging from 150 to 300 gallons per hr. It is adapted for use with all types of radiation, gravity, or forced circulation; and for firing with oil, gas, or automatic stoker. One model has a tankless heater and compression tank all under the same jacket. All metal parts exposed to flame and water are constructed of ¼ in. boiler plate, and a molded 1-in. asbestos air cell completely encases the heater. The jacket is of aluminum. Heat Equipment not Inc., 1020 E. 75th St., Chicago 19, Ill.

EASY ON THE EYES

A series of interior "daylight" paint colors has been designed to lessen eye fatigue in industrial plant workers. The colors comprise four off-shades of white scientifically formulated to reduce glare from direct and reflected light. One shade is for upper walls and ceilings, one for machinery above eye level, one for wainscoting and all wall areas at eye level, and one for machinery and traffic lanes below eye level. The colors were

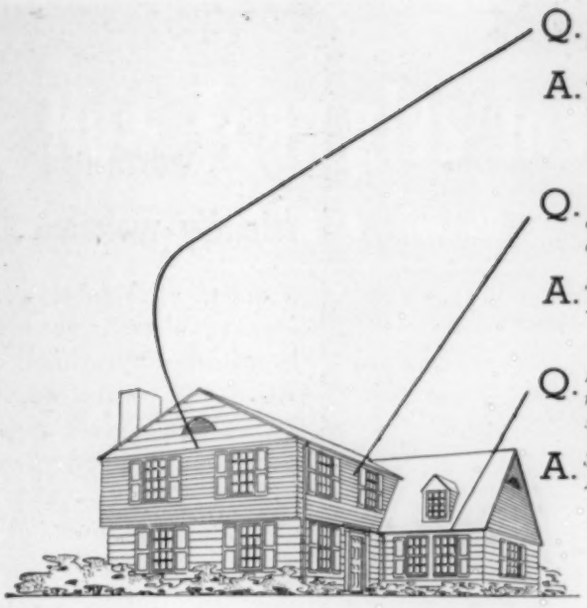
(*Continued on page 152*)

PIERCE
Amazing
SCIENTIFICALLY DESIGNED
FUSE
LINK

Keeps
EQUIPMENT
OPERATING
during safe loads
(100% to 200%)

Blow points are accurately computed. Extra surface area carries away heat. Ruggedly built tubular bridge and screen ventilated case contributes to its efficiency and lasting good value.

FREE: Balanced Lag Link to inspect and test. Specify amperage, voltage.



Q. *What is an effective way of preventing heat loss through the stairway to an attic?*

A. *See Balsam-Wool Application Data Sheet, Section D, No. 3.*

Q. *Which is the more practical of the two ways of calculating heat transmission coefficient in wall construction?*

A. *See Balsam-Wool Application Data Sheet, Section A, No. 3.*

Q. *How does one calculate the amount of insulation needed to prevent condensation moisture on inside surface of walls and roofs?*

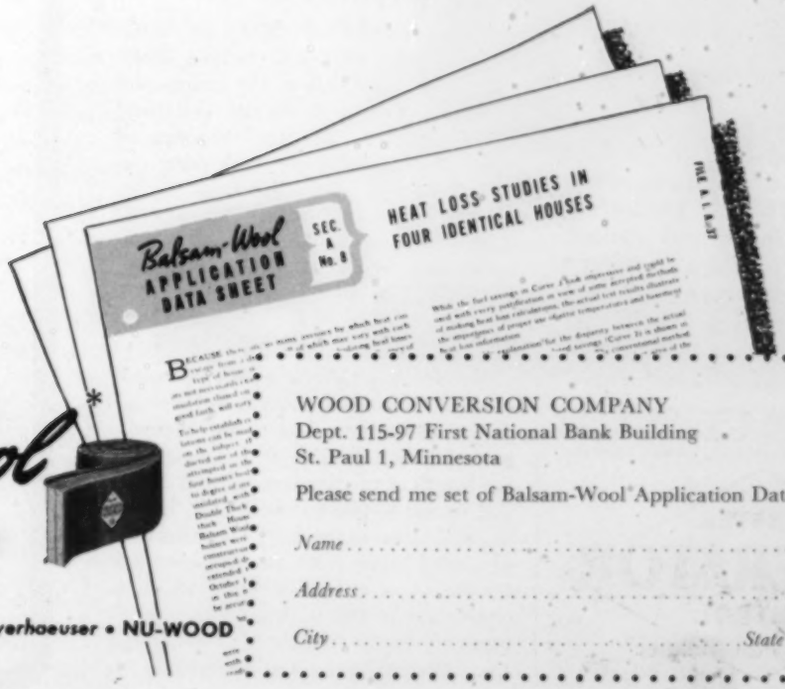
A. *See Balsam-Wool Application Data Sheet, Section A, No. 7.*

HARD-TO-GET FACTS

. . . now easily available

Balsam-Wool Data Sheets

Quick, easy, authoritative answers to tough insulation application problems—you'll find them in Balsam-Wool Application Data Sheets! These sheets combine the results of laboratory and field research—place hard-to-get facts at your finger tips. Sheets are conveniently assembled in an A.I.A. file folder. Mail the coupon today for your set of Balsam-Wool Data Sheets—they are yours for the asking without obligation.



Balsam-Wool

SEALED INSULATION

*REG. U. S. PAT. OFF.

BALSAM-WOOL • *Products of Weyerhaeuser* • NU-WOOD

WOOD CONVERSION COMPANY
Dept. 115-97 First National Bank Building
St. Paul 1, Minnesota

Please send me set of Balsam-Wool Application Data Sheets.

Name .....

Address .....

City ..... *State* .....

Hospital Saves on Cost of Heating

Delaware Hospital, Wilmington, Delaware. Heated by 6-zone Webster Moderator System of Steam Heating. Completed in 1942. Unit No. 1, center, occupied in 1940. Architects: Massena & duPont, Wilmington. Consulting Engineers Jaros, Baum & Bolles, New York. General Contractor: Turner Construction Co., Philadelphia. Heating Contractor: Benjamin F. Shaw Co., Wilmington.

When a hospital spends in the neighborhood of $30,000 annually for fuel oil, that's big business. It calls for a "controllable" steam heating system and careful heating plant operation to effect maximum economies.

The outstanding heating record of the new Delaware Hospital is based on a "Controlled-by-the-Weather" Webster Moderator System of Steam Heating, designed by Jaros, Baum & Bolles, New York Consulting Engineers.

At the time fuel-rationing went into effect it was estimated that 620,000 gallons of fuel oil would be required . . . a fuel rationing board allotted 500,000 gallons for all purposes — heating, sterilizers, laundry, kitchen equipment.

Records show that the Hospital did not require a supplementary ration. This splendid performance was obtained by a combination of a soundly designed Webster Moderator System, a craftsmanlike installation by Heating Contractor Benjamin F. Shaw and skilled operation under Chief Engineer Carl A. Baehr.

Let Webster experience help you in your heating system management problems.

WARREN WEBSTER & CO., Camden, N.J.
Representatives in principal U. S. Cities : : Est. 1888
In Canada: Darling Brothers, Limited, Montreal

WEBSTER
MODERATOR
CONTROL
"Control-by-the-weather"

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 150*)

originated by H. Creston Doner, director of the design department of Libbey-Owens-Ford Glass Company, Toledo, Ohio, as a means of easing eye strain of employees in its own plants. This company does not manufacture the paint, but the color shades have been standardized by spectrophotometer records, available to paint manufacturers.

X-RAY PROTECTION

Scientists at the National Bureau of Standards are now at work to determine the effectiveness of concrete as a protective barrier against million-volt wide-beam x-rays, use of which is increasing in medicine and industry. Industrial uses for million-volt x-ray equipment increased greatly during the war when industrial engineers turned to it as a device for detecting flaws in all types of metal. The Bureau hopes soon to set up standards affording the highest degree of protection at lowest possible cost of installation.

SHOCKPROOF OUTLET

No-Shok receptacle is a twin outlet that prevents foreign objects from being inserted in the receptacle slots. To connect an electrical appliance, the plug is inserted in the slots of a rotary cap on the face of the receptacle, given a quarter turn, and pushed in. When plug is withdrawn, a positive spring action closes the slots. The receptacle is designed to fit all standard outlet covers. Bell Electric Co., 1844 W. 21st St., Chicago 8, Ill.

STONE ENTRANCES

Easy-to-build stone facing for house entrances are offered in twelve different styles, shipped from the quarry and ready for erection at the site. A typical stone entrance "package" consists of some 35 units of stone, each piece cut and numbered, with directions for its assembly by a bricklayer. The special skills of a stone mason are said not to be needed. Conco Building Products, Inc., Mendota, Ill.

MEASURING CURVED LINES

The *Minerva Curvimeter* offers a means of measuring curved lines in the drafting room. When the wheel of the meter is guided along the line to be measured, the length of the line is registered on the dial in three different scales: ⅛ in., ¼ in., and ½ in. to the foot. A small auxiliary hand keeps track of each complete revolution of the main hand which is equivalent to 100 ft. A push button returns the hands to zero. M. Ducommun Co., 580 Fifth Ave., New York 19, N. Y.

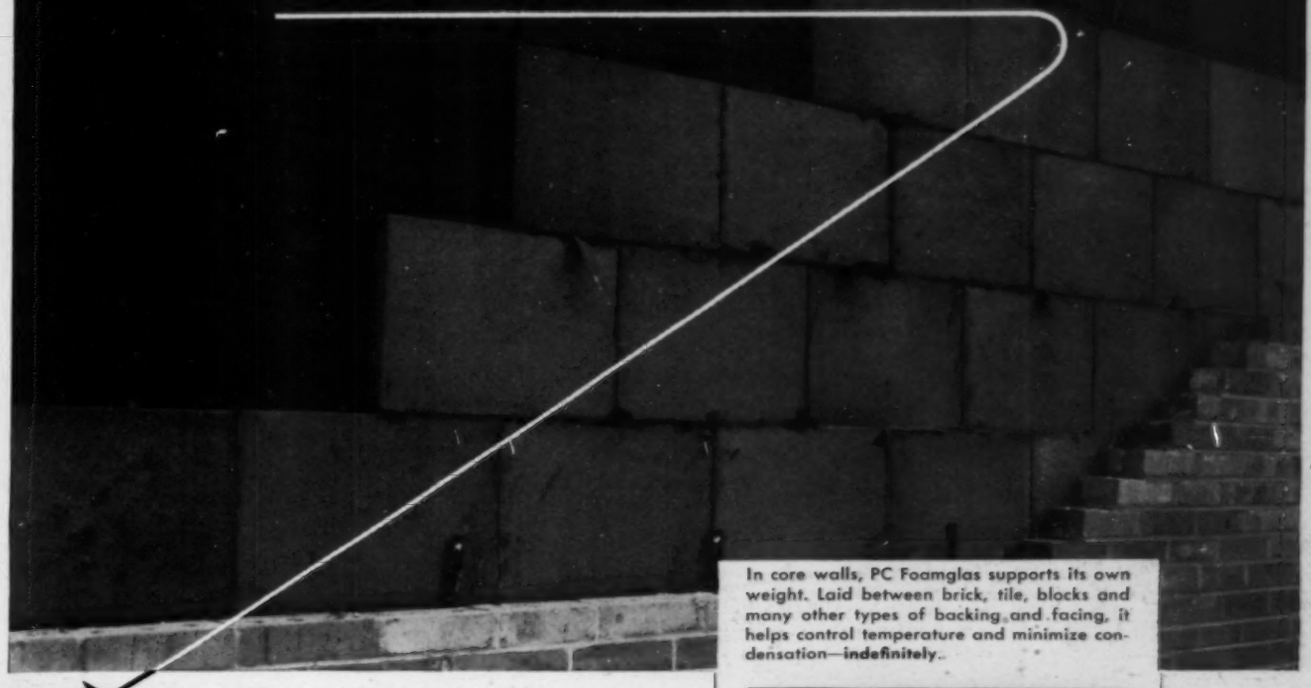
A warm and friendly welcome . . .

a quiet, comfortable, sleep-inviting room . . . right in the heart of downtown Cleveland. Hotel Cleveland adjoins Union Passenger Terminal, garage and Terminal office buildings . . . close to stores, theatres, and convenient to any place you'll want to go in Cleveland.

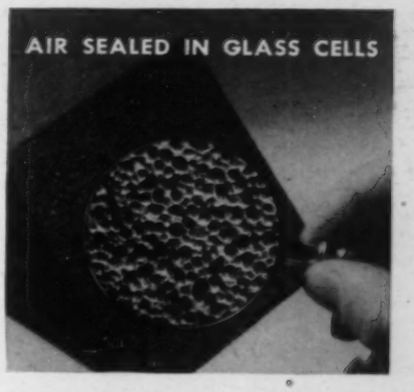
HOTEL CLEVELAND
Cleveland, Ohio

How Foamglas Insulation is Different

AND WHY IT IS BETTER



In core walls, PC Foamglas supports its own weight. Laid between brick, tile, blocks and many other types of backing and facing, it helps control temperature and minimize condensation—**indefinitely**.



PC Foamglas is the only material of its kind. It is not a fiber, not a wool, not a board or a batt. It is literally a foam of glass, solidified into big, light-weight blocks, each composed of millions of minute air-filled glass cells. That is how it is *different* from other insulating materials.

Its unique cellular structure gives Foamglas excellent insulating properties. And since it is glass—and therefore impervious to many elements that usually damage or destroy other insulating materials — PC Foamglas retains its original insulating value *permanently*. That is why it is *better* than other insulating materials.

PC Foamglas has proved its ability to help maintain temperature levels, to minimize condensation, in structures of all kinds, without repairs or replacement due to failure of the material. First cost is last cost when you insulate with PC Foamglas — whether walls, floors, roofs or ceilings. When you insulate with Foamglas you insulate for good.

Why not send the coupon for complete information? Pittsburgh Corning Corporation also makes PC Glass Blocks.

WHEN YOU INSULATE WITH FOAMGLAS . . .

YOU INSULATE FOR GOOD!

FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS.

PITTSBURGH PC CORNING

FOAMGLAS INSULATION

Pittsburgh Corning Corporation
Room 473, 632 Duquesne Way
Pittsburgh 22, Pa.

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Roofs_____ Walls_____ Floors_____

Name_____

Address_____

City_____ State_____